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ABSTRACT

The final report describes a project to research, develop, and field test Navy occupational information for inclusion into the Oregon Career Information System (CIS), a computer-assisted career education program. Five sections include: (1) introductory information; (2) a discussion of the preparation of Navy occupational information and reviewing the Oregon CIS; (3) the results of the Oregon field test, with a reproduction of the Oregon CIS report to Operations Research, Inc. (ORI); (4) a review of three other career information systems and their requirements (Computerized Vocational Information System (CVIS), System of Interactive Guidance and Information (SIGI), and Vocational Information through Computer Systems (VICS); and (5) project results and recommendations for improving and expanding the use of Navy occupational information developed. A project summary is included. Appended material includes: a listing of all CIS users in Oregon; representative descriptions of Navy occupations (32 pages) taken from "Work in the Navy--A Description of Navy Officer and Enlisted Occupations," which was incorporated into the Oregon CIS. It is stated that while the occupational information is current and factual, many users feel that it better suits the needs of the military-oriented student than the student exploring careers generally. (LH)

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Navy Career Education Diffusion Project
State of Oregon

31 March 1976

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This project involved the development and test of Navy career information materials for the Career Information System (CIS), a computer-assisted career education program in the state of Oregon. The work was based on the premise that accurate career information is the cornerstone on which knowledgeable career choices are made. The success of the All-Volunteer Navy is closely linked to the validity of perceptions about the Navy among the civilian population.

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The ORI-CIS team developed career information materials that described:

a) The general work of the Navy;

b) The special environment within which Navy occupational tasks are performed;

c) Each Navy enlisted occupation or "rating:"

d) Each Navy officer occupation.

The materials developed were published earlier in a report entitled Work In The Navy--A Description of Navy Officer and Enlisted Occupations (ORI Technical Report No. 923).

A field test of the materials was conducted in Oregon by the CIS.

This report discusses:

a) Experiences relating to the development, preparation and installation of the Navy career information materials in the Oregon CIS;

b) The results of the project field test in Oregon as reported by the CIS;

c) The adaptability of the Navy career information materials to other career information systems;

d) Ways in which the Navy can take action to improve the materials generated; to distribute the information; and to encourage its use.

SUMMARY

INTRODUCTION

This is the final report of a project, sponsored by the Office of Naval Research, and carried out jointly by Operations Research, Inc. (ORI) and the Career Information System (CIS) in Oregon, to research, develop and test Navy occupational information for inclusion in the career education program of the state of Oregon.

BACKGROUND

On 12 February 1973, ORI published a report entitled The All Volunteer Navy and the Schools (ORI Technical Report No. 764) which recommended inclusion of Navy career education materials in existing state career education programs. The report indicated that the Navy's interests in hiring sufficient numbers of qualified personnel would be well served by preparing Navy occupational information that was designed to meet the standards of career educators. That research also cited Oregon as having the foremost career education program, statewide, in the nation. This project resulted from these and other findings and recommendations in The All Volunteer Navy and The Schools.

PROJECT OBJECTIVES

The objectives of this research effort were to:

- Develop career information materials about the Navy, suitable for inclusion in career education programs
- Test the information in the CIS in Oregon
- Summarize experiences to facilitate replication in other states subsequent to the demonstration project.

PREVIOUS TECHNICAL REPORT RESULTING FROM THIS PROJECT

A previous technical report, resulting from this research effort and entitled Work In the Navy--A Description of Navy Officer and Enlisted Occupations (ORI Technical Report No. 923), was submitted to the Office of Naval Research on 6 June 1976. That report included, under single cover, all of the materials describing Navy officer and enlisted occupations, as well as the environment and special features of Navy work, developed by ORI for integration into the Oregon Career Information System.

PURPOSE OF THIS REPORT

The purpose of this report is to show:

- How the Navy information was prepared for the Oregon CIS and installed into the system
- The results of the project in Oregon as reported by the Oregon CIS
- How the materials developed can be adapted to other career information systems
- How the Navy can take action to improve the materials generated; to distribute the information; and to encourage its use.

PROJECT RESULTS, FINDINGS AND RECOMMENDATIONS

Development of Navy Occupational Information

- The project demonstrates that accurate, flexible, objective information on the Navy as an employer and on Navy occupations can be compiled for use in an existing career information system.
- Features of the Navy work environment which may be perceived as negative by some are nevertheless important and must be included if accurate perceptions of the Navy are to be developed.
- While Navy publications are helpful in some areas, by far the best sources of information are Navy uniformed and civilian personnel in the various offices at the Navy Recruiting Command and at the Bureau of Naval Personnel.
- ORI was not word limited in developing occupational information materials. Limitations on text size would increase the difficulty of providing an accurate view of Navy work.

- The changing Navy employment picture prompted use of "approximate" figures and careful selection of syntax in describing employment opportunities.

- Information reviews, while mandatory, were very helpful and productive steps in the development of accurate materials.

Oregon Field Test

- Taken as a whole, there is a consensus among students and counselors that the material is current and factual, though some users thought they detected a pro-Navy bias.

- Most (students and counselors) believed that all three volumes describing work in the Navy should be maintained.

- A small majority (of students and counselors) recommended that similar information should be developed on occupations in the other service branches.

- The information developed has the support of students and counselors, although that support is somewhat unenthusiastic.

- The Naval information contained in the CIS computer seems to serve the purpose of awareness; is accessed quite frequently; and is usable in a variety of contexts.

- The integration of Work In The Navy...with CIS needs improvement.

- Statistics which show the overall ease with which Work In The Navy...can be used are encouraging.

- The Navy Recruiting Command should continue Work In The Navy..., preferably in an operational mode, and for at least the next year, development of Work In The Navy should be centralized in a research organization that is independent of the Navy.

- Writing guides should be revised when a second edition is initiated.

- The Oregon CIS should design a format and research procedures required to produce an Employer file in the CIS computer and discuss with the Navy and other employers the feasibility of implementation.

- Work on future editions of Work In The Navy...should include preparation of indexes to each of the major career information delivery systems where Work In The Navy... will be used. The appropriate index can then be bound in the volumes that will be used with each system.

- The Department of Defense should co-sponsor with the Labor Department's National Occupation Information Service a workshop of selected researchers, recruit commanders, and occupational information system directors to review the results of military career information projects such as the present one and recommend approaches for the Defense Department and state occupational information systems to follow.

- The Navy should commit a small, continuing budget for short-range and long-range research as long as it produces career planning information.

- A long-range question that can be ideally studied in cooperation with the Navy is the long-term impact of such career information on recruitment and first-enlistment success of people who have used Work In The Navy...

Expanding the Use of the Materials

- Use of the career information materials developed by ORI has already been expanded beyond that for which they were initially intended.

- The materials may be of some additional use in the recruit training program where they might serve as supportive materials in indoctrination classes.

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I. INTRODUCTION

BACKGROUND

This is the final report of a project, sponsored by the Office of Naval Research and carried out jointly by Operations Research, Inc. (ORI) and the Career Information System (CIS) in Oregon, to research, develop and test Navy occupational information for inclusion in the career education program of the state of Oregon. A previous technical report, resulting from this research effort and entitled Work in the Navy -- A Description of Navy Officer and Enlisted Occupations (ORI Technical Report No. 923), was submitted to the Office of Naval Research on 6 June 1975. That report included, under single cover, all of the materials describing Navy officer and enlisted occupations, as well as the environment and special features of Navy work, developed by ORI for integration into the Oregon Career Information System.

This project grew out of previous research conducted by ORI for the Office of Naval Research. That work indicated that the Navy's interests in hiring sufficient numbers of qualified personnel would be well served by preparing Navy occupational information that was designed to meet the standards of career educators. That research also cited Oregon as having the foremost career education program, statewide, in the nation.

In March 1974, ORI teamed with the CIS at the University of Oregon and proposed to:

- Develop career information about the Navy, suitable for inclusion in career education programs
- Test the information in the CIS in Oregon, a system that serves over 330 locations throughout the state
- Summarize experiences to facilitate replication in other states subsequent to the demonstration project.

The materials to be developed would conform with CIS information standards, but would include sufficient information to satisfy other states' career information systems. The information was to be introduced into the Oregon CIS and its adequacy and use tested. ORI was to make recommendations concerning the use of the materials in various Recruiting Command and other Navy programs related to career education.

PURPOSE

The purpose of this report is to show:

- How the Navy information was prepared for the Oregon CIS and installed into the system
- The results of the project in Oregon as reported by the Oregon CIS
- How the materials prepared can be adapted to other career information systems
- How the Navy can take action to improve the materials generated, to distribute the information, and to encourage its use.

The results of the field test in Oregon were reported to ORI by the Oregon CIS on 31 December 1975. That report has been reproduced and included as an integral part of this report. The CIS report is useful for many reasons but, in particular, because it presents the views of students and career guidance counselors. Their assessment of the project, as compared to the ORI-CIS project objectives, is a very valuable input.

OUTLINE OF REPORT

In this introductory section, the origins and objectives of the project have been briefly discussed and the purpose of this report has been stated. In addition, special notice has been taken of the technical report published earlier as part of this project.

Section II discusses the preparation of Navy occupational information and includes a review of the Oregon CIS for which the materials were developed.

Section III discusses the results of the field test in Oregon and includes a verbatim reproduction of the Oregon CIS report to ORI.

Section IV presents a review of three other career information systems and compares the information included in the Navy occupational materials developed for the Oregon CIS, with the information requirements of the three other systems.

Section V discusses overall project results and includes recommendations for improving and expanding the use of the Navy occupational information developed.

Two appendices are also included as part of this report. Appendix A provides a listing of all CIS users in Oregon. Appendix B includes representative descriptions of Navy occupations taken from the publication Work in the Navy....

II. PREPARATION OF NAVY OCCUPATIONAL INFORMATION

OVERVIEW

This section describes the process through which ORI, in conjunction with the Oregon CIS staff, prepared Navy occupational information that conforms with the design of the Oregon CIS. The occupational materials furthermore satisfy most of the information requirements of three other career information systems currently in use in the United States. The procedures followed in the production of the information were based on Oregon CIS staff recommendations as well as recommendations from the Navy Recruiting Command and the Bureau of Naval Personnel.

The outputs of the information development process included a discussion of many of the unique features of Navy employment. This discussion, found in Section I of the ORI report entitled Work in the Navy -- A Description of Navy Officer and Enlisted Occupations (ORI Technical Report No. 923), may be the most important output of the materials development portion of the project. The majority of the output, however, consisted of descriptions of both Navy enlisted and Navy officer occupations. Those occupational descriptions comprise Sections II and III in Work in the Navy.

As a prelude to a discussion of the process by which the Navy occupational materials were developed, a review of the Oregon CIS is presented below.

REVIEW OF OREGON CAREER INFORMATION SYSTEM (CIS)

The CIS in Oregon operates statewide to provide usable labor market information to a variety of clients. A complete list of Oregon CIS users is included in Appendix A of this report. Most of the users are students in public junior high schools, high schools and community colleges. The system is also integrated into other social agencies in Oregon, and the clients of those agencies use the system. Some examples of such agencies are:

- Youth Manpower Service Center (Portland)
- Bureau of Indian Affairs
- Oregon Corrections Division.

In relation to the whole range of career education activities in Oregon, the CIS represents a highly advanced method of providing career information in the state.

The system is operated by a consortium of public agencies, all of whose programs include the goal of improving career choices. The agencies that are members of the system include:

- The Oregon State Board of Education
- The Oregon Employment Division
- Community colleges
- Universities
- Education districts.

The system is managed by a board of directors selected from the agencies that are members of the consortium. The operation of the system is directed from the University of Oregon in Eugene. The Director of the CIS is Dr. Bruce McKinlay, School of Community Service and Public Affairs, University of Oregon.

The most noteworthy aspect of the Oregon CIS method of delivering career information is the fact that the level of demand for persons in occupations is continually updated. That updating effort is a direct attempt to overcome the confusion that often results from students being attracted to occupations in which there are few if any openings. Members of the CIS staff collect labor market data from a variety of national, state and local sources to estimate current and future demand for workers of the types that are described in the Oregon system. Those estimates of labor demand are incorporated into each of the 228 occupational summaries that are in the system.

Information Components

Users of the Oregon CIS can access any or all of eight major components, each of which provides information that is important to the career development of students and clients. The eight components are listed below and described briefly in subsequent paragraphs:

- QUEST Questionnaire
- Description File
- Preparation File
- Program File
- School File
- Bibliographical File
- Visit File
- XPLOR (Clubs) File.

QUEST. QUEST is a 24 item questionnaire that allows users to identify occupations related to their interests, aptitudes and abilities as they see them.

Description File. The Description File contains information on 228 occupations that represent 95 percent of Oregon's employment. Users may access an occupational description of interest and receive a 300 word description of job duties, working conditions, hiring requirements, and local, state, and national employment prospects. The descriptions are currently localized to seven geographic regions in the state.

Preparation File. The Preparation File provides a description for each occupation in the system that includes ways to prepare for the occupations, licensing requirements and a cross-reference to appropriate postsecondary educational training.

Program File. The Program File contains information on all postsecondary educational programs and training in Oregon. Users may access a particular program and receive a description of degrees offered, specialties, program objectives, courses and a list of schools in Oregon that offer the program.

School File. The School File contains information on all of Oregon's two and four year colleges and licensed proprietary institutions. Users may compare three schools at a time, selecting the information they want from a list of 65 different information topics.

Bibliographical File. The Bibliographical File provides references to other resources containing information on a particular job. Resource books listed in this file are included as part of the total information package.

Visit File. The Visit File provides the names, addresses and telephone numbers of persons who have volunteered to discuss their occupations with students or clients who use the system. Special instructions are also provided in the Visit File to assist the students or clients in arranging a visit.

XPLOR (Clubs) File. The XPLOR (Clubs) File provides information on the Scouts' Explorer program and community-wide career related organizations. Names, addresses and contact persons for Explorer posts and community organizations are given.

INFORMATION DEVELOPMENT PROCESS

The following paragraphs describe the ORI-CIS experiences relating to the development of the Navy occupational information for the CIS. Topics discussed include:

- Information Goals
- Information Sources
- The Situation at the Outset
- Initial Steps
- Early Problems and Developments
- Materials Describing the Navy As an Employer
- Materials Describing Enlisted Occupations

- Materials Describing Officer Occupations .
- Information Reviews Conducted.

Information Goals

The first goal of the information development process was to generate information-rich materials for inclusion in the Oregon CIS which would accurately describe:

- The general work of the Navy
- The special environment within which that work is performed
- The career development opportunities in the Navy
- The enlisted occupations
- The officer occupations.

Development of such information would enhance attainment of a second goal, namely, that students and career guidance counselors would develop accurate perceptions of Navy employment and see it as a viable work option.

Information Sources

A wide variety of information sources were made available to ORI staff members. Publications delivered to ORI included:

- The Bluejacket's Manual
- "Manual of Qualifications for Advancement" (NAVPERS 18068C)
- "Manual of Navy Officer Classifications" (NAVPERS 15839B)
- "Manual of Qualifications for Warrant Officer" (NAVPERS 18455A)
- "Manual of Qualifications for Limited Duty Officers" (NAVPERS 18564A)
- "Navy Military Personnel Statistics, Quarterly Report(s)" (NAVPERS 15658)
- "Navy Training-Civilian Careers School Year 1973/74; 1974/75"
- "Careers-United States Navy Occupational Handbook" (Sixth Edition).

Equally if not more important as sources of information were the wide varieties of experienced uniformed and civilian Navy personnel available at the Navy Recruiting Command and at the Bureau of Naval Personnel.

The Situation at the Outset

The situation existing at the outset of the work effort can be summarized as follows:

- The Navy Recruiting Command and the Bureau of Naval Personnel had available a variety of publications and materials which described Navy occupations, programs, procedures and traditions, and, to some degree, the special features of Navy life.
- The Oregon CIS staff included professional career education specialists, well versed in the standards and requirements for occupational information in a career information system.
- The ORI staff was prepared to provide the link between the two, having shown earlier that the Navy's interests would be well served by preparing Navy occupational information that was designed to meet the standards of career educators.
- The extent to which existing Navy materials would adequately satisfy the requirements of a career information system was not known at the outset.

Initial Steps

The ORI-CIS team began in-depth discussions and work sessions in May of 1974. The results of these early sessions are summarized below.

- ORI was provided with the occupational listing of the Oregon CIS for comparison with Navy enlisted and officer occupations.
- It was concluded that occupations for which the Navy represented a major employer would be given a different treatment in the CIS than occupations for which the Navy was only a minor source of demand. It was agreed that a "major employer" would be considered to be one that employed more than 5 percent of the total national employment in that occupation.
- Navy occupations that included more than 5 percent of the national work force in that occupation would be given a separate occupational summary in the computerized file and in the needle-sort box.
- Integration of Navy occupational information would permit the student user of the CIS to find the Navy information whether the user seeks information about "the Navy" or seeks information about a specific occupation such as "electronics technician".

- Occupational summaries for "Navy Officers" and "Navy Enlisted Personnel" were written by ORI and added to the CIS Occupations File. Previously, only "Military Officer" and "Military Enlisted Man" summaries had existed in the occupations file.

- It was determined that the brief information in the CIS computer mode would be backed up by a detailed "Navy guide" that would describe Navy occupations, the Navy environment for work, pay and allowances, education programs, and training programs. Furthermore, the "Navy guide" would be referred to in each of the CIS occupational descriptions for which the Navy had similar occupations, regardless of the number of persons the Navy employed in that occupation.

The "Navy guide" referred to above was subsequently produced and published as the technical report, Work in the Navy.

Early Problems and Developments

Two potential organizational problems were also discussed during the initial work sessions. The first concerned the fact that only Navy occupational information was being introduced into the CIS and the impact such action might have on four-service joint efforts (such as ASVAB testing) in Oregon. This matter was brought to the attention of the Navy Recruiting Command and steps were taken to apprise Army, Air Force and Marine Corps recruiting organizations of the interest of CIS personnel in including all relevant occupational information of all service branches. The fact that Navy occupational information is the only military occupational information in the CIS remains a problem and is addressed in subsequent sections of this report.

The second potential problem that was foreseen was the possibility that guidance counselors in Oregon would see the inclusion of Navy information in CIS as the end of Navy recruiting activity at the schools. This was certainly not the intent of ORI, CIS or of the Navy. Rather, the intent of the CIS integration of Navy information was to allow Navy recruiters to improve their professional relationship vis-a-vis both school personnel and students. To ensure this relationship and with the assistance of the Director, Academic Community Liaison, Navy Recruiting Command, a dialogue was initiated between the ORI-CIS team and the Navy Recruiting District, Portland. Cdr. G.J. Leyraaf and Mr. Joseph Garnero of the Navy Recruiting District, Portland, attended several briefings on the project and were enthusiastic about its prospects. Their understanding of the intent of the project, coupled with presentations of project goals by CIS staff members to guidance counselors in Oregon, effectively forestalled the development of this problem.

In regard to the status of the Navy as a major employer for an occupation, ORI obtained employment statistics from the Bureau of Labor Statistics on the numbers of persons employed in various occupations. These were used to determine if the Navy employed a significant number of the total employment

in any occupation. For only one occupation, that of Powdermen, did the Navy employ more than 5 percent of the total national employment. But that was true only if Navy Aviation Ordnancemen, Gunner's Mates, Torpedoman's Mates and Minemen (whose work with explosives is related to that of Powdermen) were combined into a single total. Since no single Navy occupation accounted for more than 5 percent of the national work force in that occupation, there are no separate occupational summaries for individual Navy ratings in the computerized file. (Only the "Navy Officers" and "Navy Enlisted Personnel" summaries, mentioned earlier, are included in the file.)

Materials Describing the Navy As an Employer

During early discussions, it was reconized by the ORI-CIS team that descriptions of Navy occupations alone would not satisfy the requirements of a career information system. Occupational descriptions, while obviously essential to career information needs, are sufficient by themselves only when the general work environment is the same among various employers and when that environment is generally understood. But the Navy is a unique employer with a unique work environment. That environment must be understood and development of materials describing the Navy work environment was therefore a highly significant part of the project.

ORI developed materials which addressed the following topics:

- General Information on the Navy As a(n)
  - National public employer
  - Traditional employer
  - Equal opportunity employer
- The Size of the Navy
- The Organization of the Navy
- Enlisted Rates and Ratings
- Officer Ranks, Categories and Specialties
- CIS Occupational Titles vs. Navy Enlisted Ratings and Officer Specialties
- Shipboard Organization
- The General Work of the Navy
- Shipboard Routine
- Shipboard Life
- Lengths of Cruises and Time Between Cruises
- Work at Navy Shore Facilities

- Rotation Between Sea Duty and Shore Duty
- The Changing Navy
- How the Navy Hires
  - General practices
  - Direct procurement petty officer program
  - Nature of enlistment contract and oath
- Navy Pay
  - Basic pay
  - Basic allowances
  - Special pay
  - Incentive pay/hazardous duty pay
  - Miscellaneous pay and allowances
  - Federal tax advantage
  - Table of Navy pay
  - Other pay benefits
  - Navy retirement benefits
- Early Training in the Navy
- Continued Training in the Navy
- Navy Education Programs
- Advancement in the Navy.

In discussing all of these topics, the primary concern was to develop materials which accurately described the Navy work environment. This is a cardinal rule for career information materials. Materials which, in any way, attempt to influence a user of a career information system are totally unacceptable. Acceptable career information materials merely provide information on which knowledgeable choices can be made. As a result, features of the Navy work environment which seem negative to some or many persons were given the same consideration as the features generally felt to be positive in nature.

While the various Navy publications listed earlier were of some help in developing information on the Navy work environment, without question the best sources of information were Navy men and women in the Navy Recruiting Command and in the Bureau of Naval Personnel. One member of the ORI staff had just completed 11 years of service as a naval aviator. His knowledge of current Navy programs, as well as of Navy technology, assisted the ORI team in developing the list of topics to be discussed and in determining the types of questions to be addressed to the Recruiting Command and to the Bureau of Naval Personnel.

Some significant points can be made concerning the comparison of Navy enlisted ratings and officer specialties with the CIS occupational titles or other occupational listings. The task is a major one and requires detailed examination and comparison of all of the descriptive information available. It should be remembered that the title of the occupation itself is not as important as the description of that occupation in the information system. The work of a Navy Aviation Structural Mechanic may not be generally thought of as being similar to the work of a Body and Fender Repairman (Oregon CIS Code 5486); but, in fact, the work of an Aviation Structural Mechanic, as described in various Navy publications, and the work of a Body and Fender Repairman, as described in the CIS summary, are similar in a number of respects.

Use of the word "similar" is important to such occupational comparisons. It is one thing to say that the work of one occupation is "similar" to that of another occupation, but quite another thing to say that one occupation is "equivalent" to another. In most cases, some of the work of Navy ratings and specialties compared with some of the work of various civilian occupations; and, in that regard, they are considered "similar". This also accounts for the fact that many Navy ratings and specialties are listed a number of times; i.e., some of their work is similar to some of the work of a number of civilian occupations. There are a few cases in which Navy ratings can be considered to be the "equivalent" of civilian occupations as described in the CIS Occupations File (example: Engineering Aid, Illustrator-Draftsman). However, the materials describing the Navy work environment point out the fact that Navy and civilian "equivalent" occupations are nevertheless performed in two very different environments.

Comparing officer categories and specialties requires special analysis. Consider an Unrestricted Line Officer who is a Naval Aviator. This officer performs work in a variety of occupations. In the first place, he or she is a pilot. But he or she may also:

- Screen, select, assign, train and evaluate groups of personnel (Personnel Management)
- Plan, coordinate and supervise the efforts of an aviation maintenance work force (Production Superintendent)
- Plan, coordinate and supervise the efforts of a quality assurance work force (Quality Control Inspector)
- Administer Navy school programs and perhaps serve as President of the Naval War College (Education Administration)
- Serve on the faculty of the Naval Postgraduate School, the U.S. Naval Academy, or the faculty of a college or university with a NROTC program (College Professor)
- Participate in the design, development and programming of various Navy plans and policies (Programmer and Systems Analyst)

- Develop mathematical programs and collect statistical data for analysis in support of Navy engineering and other programs (Mathematician and Statistician).

It is not true to say that a naval aviator is just a pilot. Neither is it true to say that personnel management is his or her primary occupation. But both are a part of his or her work. To indicate that a variety of occupations are included under a general title such as Unrestricted Line Officer, the phrase "Unrestricted Line Officer Sub-specialty" was listed opposite CIS occupational titles such as "Personnel Manager" and "Production Superintendent".

A similar technique was employed for comparing and listing Limited Duty Officer and Warrant Officer sub-specialties with CIS occupational titles.

Finally, it should be noted that the primary work of some officers, such as a Medical Corps Officer, is indeed similar to that of a civilian occupation, in this case the work of a "Physician". Opposite the CIS occupational title "Physician", Medical Corps Officer is therefore listed without a sub-specialty notation.

Materials Describing Navy Enlisted Occupations

Development of materials describing Navy enlisted occupations was accomplished in the following manner:

- The Oregon CIS staff provided ORI with a format for occupational information which conformed with the general format for information in use in the CIS. Occupational materials were to include information on:

  . Nature of the Job
  . Working Conditions
    -- Sea-Shore Rotation
  . Qualifications
  . Training Provided by the Navy
  . Employment Opportunity
  . Additional Information.

- ORI developed information on each Navy enlisted rating according to the above format through:

  . Detailed review of the appropriate Navy publications listed earlier
  . Contact with various offices in the Bureau of Naval Personnel.

Individual Navy rating descriptions were not limited to 300 words as in the case of occupational summaries in the CIS Occupations File. This was so because the materials were to be included in a "Navy guide" rather

than in the computerized occupations file. As a result, the work descriptions are information rich which helps to provide a more accurate view of Navy work and which also makes the materials more adaptable to use in other information systems.

In keeping with CIS standards for accuracy in career information materials, the Navy rating descriptions present negative features of the work (such as hot and noisy working conditions) as well as positive features.

Some additional points concerning the development of the enlisted rating descriptions are listed below:

- In an effort to encourage users of the Navy guide to read the materials describing the general work environment of the Navy, a note was placed at the bottom of the first page of each rating description. The note stresses the importance of reading the first section of the guide and of understanding the general work of the Navy. The last item in each rating description, i.e., "Additional Information", includes page references to selected parts of the first section in a further effort to encourage its use.

- Figures relating to the amount of time sailors in various ratings spend on sea duty and shore duty, as well as figures relating to the total number of persons in a rating, are noted as being "approximate" figures only. It was felt that this would alleviate update problems to some extent.

- Regarding opportunities for employment in a given rating, ORI recognized the fact that the employment picture in many ratings is subject to change. As a result, the words chosen to describe such opportunities followed the pattern listed below:

  - For ratings in which there are routine shortages of personnel, it is noted that "shortages exist and opportunities are excellent for qualified applicants".
  - For ratings in which there is routine turnover, opportunities are described as "excellent for qualified applicants".
  - For ratings in which there are periods during which opportunities are limited, opportunities are described as "good for qualified applicants".
  - For ratings in which there are usually many more applicants than there are openings, it is noted that "opportunities exist for highly qualified personnel".
  - For ratings which are routinely full, it is noted that "opportunities are limited except for very highly qualified applicants".

Materials Describing Navy Officer Occupations

General procedures for developing materials describing Navy officer occupations were the same as those noted for developing enlisted occupational descriptions. The format for officer materials was also similar to that for enlisted materials.

In the case of Limited Duty Officers and Warrant Officers, additional information was added to indicate the enlisted ratings which normally function as feeders to various limited duty and warrant officer categories.

Regarding employment opportunities for officer categories, the approximate numbers of officers in each category were noted, but no attempt was made to estimate the opportunities for employment. Information was confined to a discussion of variables affecting employment opportunities and to a reiteration of the qualifications required.

Information Reviews Conducted

As noted earlier, one of the project goals was to develop information about work in the Navy that was both accurate and in conformance with the information standards of the Oregon CIS. The materials were therefore reviewed by CIS staff members as well as Navy Recruiting Command representatives. Some significant results of those reviews are noted in the following paragraphs.

Materials Describing the Navy As an Employer. As a result of the reviews conducted by the Oregon CIS staff and representatives of the Navy Recruiting Command, the following recommendations were among those incorporated in the final draft of materials describing the Navy as an employer.

- The term "hierarchical" was explained. The term appears in the discussion of the organization of the Navy.
- The need for "battle station" drills was explained and an analogy was made to football team drills and fire department drills.
- Information was added regarding the need for sailors to learn to get along with all types of people at very close quarters and to adapt to customs and cultures in foreign countries.
- A table was added listing representative ship sizes and ship complements.
- Information on the lengths of cruises was added and this, in turn, suggested treatment of "turnaround" times.
- The officer rank table was moved to a position below that of the enlisted to allay fears that a confused reader might think of a seaman recruit as the counterpart of an ensign.

- Under the heading "The Changing Navy", information concerning habitability improvements and overseas home-porting was added.

- A pay table (abbreviated) was inserted as were brief discussions of retirement and education programs.

- Navy recruiting information was added, including discussion of:

    . Opportunities for women
    . The nature of the enlistment contract
    . The seasonal variation in availability of Navy schools
    . The direct entry petty officer program.

- Information on officer and enlisted advancement was added.

- A shipboard organization chart was added.

- An actual enlistment contract was included.

- A discussion relating the need for cooperation aboard ship with operational implications was included.

- The transferability of Navy careers to civilian careers after retirement had been overstated. The text was appropriately reworded.

Materials Describing Officer and Enlisted Occupations. Review of these materials by CIS staff members and representatives of the Navy Recruiting Command resulted mainly in the addition of information to the original materials describing officer and enlisted occupations. The additions included:

- Information on sea-shore rotation patterns for each rating and category

- Information on numbers of personnel in each rating and category

- Informational notes referring users back to the chapter describing the general work of the Navy.

One particularly helpful review by Capt. P. A. Stark, USN, Director of Officer Programs in the Operations Department of the Navy Recruiting Command, resulted in a general rewrite of the Unrestricted Line Officer occupational description.

Review of Opportunities for Women in the Navy. On 9 April 1975, Cdr. John Brame, USN, Director of Academic Community Liaison at the Navy Recruiting Command, and Mr. McDermott of the ORI staff, met with Capt. Mary Gore, USN, Assistant Director of the Recruiting Support Department at the Navy Recruiting Command. Capt. Gore had reviewed the materials and had noticed discrepancies, some of them serious ones, regarding the manner in which opportunities for women in the Navy were presented. The significance of her comments and recommendations was recognized immediately and prompted a series of corrections and revisions to materials describing the general work of the Navy as well as to those describing the officer and enlisted occupations.

As a summary of the actions taken following Capt. Gore's review of the materials, Figure 1 presents a copy of Mr. McDermott's letter to Capt. Gore listing the corrective actions taken.

FIGURE 1

Operations Research, Inc.

1400 Spring Street, Silver Spring, Maryland 20910

Telephone: 588-6180, Area Code 301

23 July 1975

Captain Mary Gore, USN
Asst. Director, Recruiting
Support Department
Navy Recruiting Command
Ballston Tower #2, Room 707
4015 Wilson Boulevard
Arlington, Virginia 22203

Dear Captain Gore:

On 9 April 1975, Cdr. John Brame and I met with you to discuss the career information materials generated by ORI describing work in the Navy. At that time, you expressed concern about the manner in which opportunities for women in the Navy were presented. Whereas we had addressed the subject in general, our statements were not fully accurate and we had not followed through with adequate information in each of the individual officer and enlisted descriptions. At that time, we agreed that remedial action was necessary.

As a first step, I reread the materials in their entirety with opportunities for women in mind, and it was clear that your concern was justified. We then proceeded to rewrite portions of the first chapter describing the general work of the Navy and then changed and/or added information to each of the individual officer and enlisted descriptions. The information added was verified through appropriate offices in BUPERS.

Specific corrective actions that were taken are listed below:

1. On Page 3 of Chapter I, under the heading The Navy Is an Equal Opportunity Employer, information regarding women and combat was rewritten. We had incorrectly stated that women were precluded by law from assignment to a certain few ratings when, in fact, the law only precludes women from serving in combat or on combatant ships. The exclusion of women from certain ratings is essentially an administrative policy based on the number of potential shore billets available in certain ratings. This distinction was made clear.

2. On Page 12, in a paragraph introducing the various officer specialties, the role of women officers in naval aviation was specifically noted.

3. Beginning on Page 32, a section entitled "Shore Duty" - Work at Navy Shore Facilities, was added. As you suggested, a general description of the shore establishment provided an excellent opportunity for demonstrating how women participate fully in the work of the Navy.

A Reliance Group Consulting Company

FIGURE 1 (Cont.)

Operations Research, Inc.

Captain Mary Gore, USN
Navy Recruiting Command
23 July 1975
Page two

4. On the first page of each enlisted rating description, a note at the bottom of the page encourages the user to read the first chapter of the manual for general information about work in the Navy. In the text of the note, all references to "his own rating" were changed to read "his or her own rating". (For those few ratings to which women are not assigned, the text was left to read "his own rating".)

5. In each enlisted rating description, under the heading Sea-Shore Rotation, a statement was added indicating that women in that rating work at shore facilities in the United States and overseas since they do not serve aboard combatant ships. (Again, for those few ratings to which women are not assigned, the statement was omitted.)

6. In each enlisted rating description, under the heading EMPLOYMENT OPPORTUNITY, the term "personnel" was changed to read "men and women". (Again, this action did not apply for those few ratings to which women are not assigned.)

7. The Unrestricted Line Officer description was rewritten in entirety. The role of women in the general line was noted. Under the heading Sea-Shore Rotation, a statement was made indicating that women officers in the Unrestricted Line serve at shore facilities in the United States and overseas since they do not serve aboard combatant ships. Women officer participation in naval aviation was again noted. Under the heading EMPLOYMENT OPPORTUNITY, the term "Unrestricted Line Officers" was expanded to read "men and women Unrestricted Line Officers".

8. On the first page of each officer description, a note encourages users to read the first chapter of the manual for general information about work in the Navy. In the text of the note, all references to "his own specialty" were changed to read "his or her own specialty". (For those specialties to which women are not assigned, the text was left to read "his own specialty".)

9. In each Restricted Line description, under the heading EMPLOYMENT OPPORTUNITY, a paragraph was added noting that, while some Navy women officers perform tasks associated with restricted line specialties, they are not appointed to the Restricted Line because laws governing promotion of women make it more desirable for women to be in the Unrestricted Line or staff corps categories.

10. In each officer staff corps description, under the heading Assignment Pattern, a statement was added indicating that women in that specialty work at shore facilities in the United States and overseas since they do not serve aboard combatant ships. Also, under the heading EMPLOYMENT OPPORTUNITY, the term "officers" was expanded to read "men and women officers".

FIGURE 1 (Cont.)

Operations Research, Inc.

Captain Mary Gore, USN
Navy Recruiting Command
23 July 1975
Page three

11. In each limited duty officer description, under the heading EMPLOYMENT OPPORTUNITY, a statement was added indicating that, under existing legislation, women are not appointed to limited duty officer status.

12. In each warrant officer description, under the heading Sea-Shore Rotation, a statement was added indicating that women in that specialty work at shore facilities in the United States and overseas since they do not serve aboard combatant ships. (For those few warrant officer specialties to which women are not assigned, the statement was omitted.)

13. In each warrant officer description, under the heading EMPLOYMENT OPPORTUNITY, the term "outstanding personnel" was expanded to read "outstanding men and women". (Again, this action did not apply to those specialties to which women are not assigned.)

The corrective actions taken were necessary as a result of our never having reread the manual from cover to cover with a view toward evaluating how well we had described work opportunities for women in the Navy. Fortunately, we were able to complete this review before the materials were widely disseminated. We now have an improved product and we appreciate your active interest in improving the materials.

We will be monitoring future legislation for changes impacting on the expanding role of women in the Navy.

If I can answer any questions, please contact me at any time.

Very truly yours,

Michael N. McDermott

Michael N. McDermott
Principal Staff

MNMcD:glj

cc: Cdr. John Brame, USN

III. OREGON FIELD TEST REPORT

OVERVIEW

This section is devoted to a verbatim reproduction of the Oregon CIS Field Test Report submitted to ORI by Dr. Bruce McKinlay and Mr. Michael McKeever, Director and member, respectively, of the Oregon CIS.

The materials generated by ORI were bound in a single volume* which included three sections:

- Section I - The Navy As an Employer
- Section II - Navy Enlisted "Ratings" or Occupations
- Section III - Navy Officer Occupations.

The Oregon CIS reproduced and distributed the materials in three separately bound volumes, with Volumes I, II and III corresponding to Sections I, II and III, respectively.

The cross-reference indexes discussed under the report sub-heading "Independent Usage", were designed and incorporated into the materials by the Oregon CIS. ORI considers the indexes to be a most useful addition to the materials.

The Oregon CIS Field Test Report is reproduced in its entirety in the following pages.

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* As noted earlier, this volume was published as a technical report entitled Work in the Navy -- A Description of Navy Officer and Enlisted Occupations (ORI Technical Report No. 923, 6 June 1975).

CAREER PLANNING INFORMATION ABOUT WORK IN THE NAVY

Field Test Report

submitted to

Operations Research, Incorporated
Silver Spring, Maryland

by

Dr. Bruce McKinlay
and
Michael McKeever

Oregon Career Information System
December 1975

INTRODUCTION

Accurate career information is one of the cornerstones of knowledgeable career choices. This report describes part of a joint effort to:

-Describe the All-Volunteer Navy as an employer, discussing its jobs and work environment as one would other major employers.

-Make it easy for people to relate work in the Navy to their own career plans and to similar occupations elsewhere by placing this employer information in the more general context of the Career Information System.

-Discover ways of providing impartial and readily accessible information about major employers, such as the Navy.

Work in the Navy and its integration with general career planning information is the result of a desire by the Oregon Career Information System to begin delivering information about various major employers, and a special research capacity at Operations Research, Incorporated for occupational research, in addition to a desire by the Naval Recruiting Command to have its jobs and working conditions described impartially for people exploring careers.

The material in this publication was prepared by W. Thomas Callahan and Michael N. McDermott at Operations Research, Incorporated, Silver Spring, Maryland, using procedures and standards developed by the Career Information System for preparing occupational material. Support and access to Navy employment information was provided by Cdr. John H. Brame, USN, Director, Academic Community Liason, Naval Recruiting Command, Washington, DC, and Cdr. G.J. Leygraaf, USN, Commanding Officer, Navy Recruiting District, Portland, Oregon. Evaluation of the material was carried out in selected Oregon schools and coordinated by Michael McKeever at the Career Information System, Eugene, Oregon.

This report describes the integration of the Naval information into the Career Information System and the findings from a brief field test in Oregon high schools during the Fall of 1975.

Design of Military Career Information under the All-Volunteer Force

The military has historically been a matter of serious concern in career planning by young men in light of the legal requirements imposed by the draft. Consequently, military service has been viewed (1) as an obligation, (2) as an alternative to employment, and (3) as a source of training for transfer to civilian employment. Occupational information and career information systems have reflected these points of view.

Now, however, with the abolition of the draft and reliance on an all-volunteer force, the relationship between young people and the military has changed drastically. Military service is no longer a legal obligation; it is now an employment option. This change creates new kinds of information needs. What are the employment options offered in the military? How are they similar/different in training, work environment, career ladders, etc. to civilian occupations? It also creates new questions of information delivery, specifically: How can valid sources of current information be developed? How can this information be most appropriately presented in a general-purpose career information system?

This Project

Under this proposal, analysis was made of the ways in which Navy information could most appropriately be presented for individual career planning and within the structure of an impartial, general-purpose career information system. Information meeting those specifications was developed by Operations Research, Inc. (ORI) of Silver Spring, Maryland, an independent research organization with knowledge of Navy occupations and Navy training, and with prior experience in studying the proper relationship of Navy occupational information to career education and to civilian jobs.[1] Following agreement on information development methodology and delivery design, such information has been pilot tested and evaluated through Oregon's Career Information System under a sub-contract from ORI.

Design Principles

Writing and delivering career information about a military employer requires certain design principles:

1. Every effort should be made to establish and maintain information development procedures which insure the highest possible

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[1]See Operations Research, Inc., The All-Volunteer Navy and the Schools (Silver Spring, Md.: Operations Research, Inc.), 1973.

objectivity and accuracy of the information presented in the System. Treatment of the information in the delivery system must be impartial and consistent with the treatment of comparable information.

2. The Navy should be treated like other employers and information about Navy employment opportunities should be treated in the same context as employment information on comparable careers in civilian environment.

3. The treatment of Navy career information should serve as a model for inclusion, through additional or revised statements, of information about other military services.

These design principles were subsequently converted by Operations Research, Incorporated and CIS Staff into specific writing guides which deal with the content and style of the material as well as its location in the Career Information System. For flexibility in its use, much of the new information was published under the title Work in the Navy. It appeared in three volumes.

Format and Uses of Work in the Navy

Volume I, The Navy as an Employer, is designed to give any person a general flavor of life in the Navy. This volume provides a description of the Naval work environment, including the structure and purpose of the Navy, the qualifications of a Navy employee, as well as how much pay and advancement a Naval enlisted man or officer might expect. The person wishing more specific information turns to Volumes II and III, Navy Enlisted Occupations and Navy Officer Occupations. These books give detailed descriptions of work duties and conditions, qualifications and employment opportunities for each of the specific occupations in the Naval personnel system.

Work in the Navy is designed to be used in a wide variety of situations. First, it is a self-contained set and is usable as a resource independent of the entire CIS information package. Secondly, a student can begin his or her occupational information search on the CIS computer and/or needle-sort system and, by using the system of cross-reference indexes contained within the three volumes, continue his or her information search in the current CIS materials. Below is a short description of each of these alternatives.

Independent Usage

The key to using Work in the Navy as a self-contained resource is to become well acquainted with the table of contents and cross-reference indexes. All of the Navy occupations are referenced to their equivalents in the civilian job sector and conversely. This cross-referencing is of importance since many Navy job titles are unfamiliar to the average person and may be confusing. However, equipped with the title of a civilian counterpart, the student will be able to find the Naval information concerning a civilian occupation he or she is interested in. These indexes can be found in the back of all three volumes as well as in Tables 1 and 3 of Volume I. Examples of the cross-reference system follow.

Navy Title to Civilian

Appendix, Volume I, page A-1:

Navy Specialty	Page Number	Civilian Related Occupations
AERONAUTICAL ENGINEERING DUTY OFFICER AEDO's function as professional aeronautical engineers and as technical managers in every aspect of naval aircraft design, development, maintenance	339	Production Superintendent, Sales and Service Manager, Engineer, Physical Scientist, Quality Control Inspector, Pilot and Flight Engineer, Lab Tester

Civilian Title to Navy

Navy Occupational Index, Volume II, page I-1

CIS Code	Occupational Title	Navy Enlisted Rating	Navy Officer Rank
1132	Hotel and Motel Managers		Supply Corps Subspecialty, pp. 380, 464, 538

The final referencing within Work in the Navy as an independent resource is found under the "Additional Information" category located in each of the approximately 125 job descriptions in Volumes II and III. Here the student finds references to those pages in Volume I containing information which is relevant to that particular job.

Switching from CIS Information to Work in the Navy

Work in the Navy is to be used as a supplemental resource to the total CIS information package. There are a number of ways for a student to utilize these volumes as a logical follow-up to the current CIS information but only the most basic will be detailed here. Take the following hypothetical example:

a. Student fills out CIS questionnaire, uses computer or needle-sort and receives from it a list of suitable occupations which includes "Welder."

b. Student asks computer for either the Bibliography File or the Description File on Welder. The Bibliography will list Work in the Navy, Volume II as a source of additional information because the Navy has a corresponding occupation (see following sample print-out). The Description File will list it if the Navy is a major employer of this occupation. (The student using the Needle-Sort will look up "Welder" in the Occupational Information printout. Here he or she will find a bibliographical reference with the same information listed above.)

Sample Printout:

```
CIS

NOTE:
     THERE ARE TWO OCCUPATIONAL SPECIALTIES ADDED TO THE
PROGRAM:
     -11722  NAVAL OFFICERS
     -94364  NAVY ENLISTED PERSONNEL
     ALSO SEE 'WORK IN THE NAVY', REFERRED TO IN BIB.



HELLO; PLEASE ENTER YOUR NAME, THEN PUNCH THE 'RETURN' KEY.
?BOB
HELLO BOB.
YOU ARE LOGGED IN TO THE CAREER INFORMATION SYSTEM;
USE IT AS MUCH AS YOU WANT.  WHEN YOU ARE THROUGH, PLEASE
TYPE IN 'STOP' SO YOU DO NOT WASTE COMPUTER TIME.

NOW, HOW DO YOU WANT TO START?
IF YOU FILLED OUT THE QUESTIONNAIRE IN YOUR HANDBOOK,
        TYPE IN: 'QUEST.'
IF THERE ARE OCCUPATIONS, EDUCATIONAL PROGRAMS,
OR SCHOOLS YOU WANT INFORMATION ABOUT,
        TYPE IN: 'INFO.'
?INFO
THREE KINDS OF INFORMATION ARE STORED IN THE COMPUTER:
- - - OCCUPATIONS:  LOCAL, STATE, AND NATIONAL LABOR MARKET
      INFORMATION THAT IS CONTINUOUSLY UPDATED.
          TYPE IN 'DESC' AND A 4-DIGIT OCCUPATION CODE
          (EXAMPLE: DESC 1684).  YOU MAY ALSO FIND OCCU-
          PATIONAL BIBLIOGRAPHIES (BIB), VISITS (VISIT),
          EXPLORER POSTS (XPLOR), AND WAYS TO PREPARE FOR
          OCCUPATIONS (PREP).

- - - PROGRAMS OF STUDY AND TRAINING: TYPICAL
      COURSEWORK AND LIST OF SCHOOLS.
          TYPE IN 'PROG' AND A 3-DIGIT PROGRAM CODE
          EXAMPLE: PROG 131

- - - SCHOOLS:  SERVICES AND COSTS OF SCHOOLS.
          TYPE IN 'SCH'

YOU CAN FIND CODE LISTS IN YOUR HANDBOOK.


BIB 5482

 5482    WELDERS
'OCCUPATIONAL OUTLOOK HANDBOOK' (1974-75 ED.), PP. 81-83;
'DICTIONARY OF OCCUPATIONAL TITLES' (VOL. II), P. 322
'WORK IN THE NAVY' (VOL. II), PP. 101, 113, 191, 313, 328.
```

c. Student looks up the source citation on page 313 and finds information on "Steelworkers." This is the Navy job equivalent of a civilian welder.

The CIS delivery system contains new Occupational information for occupational specialties titled "Navy Enlisted Personnel" and "Navy Officers." They include a description of the vocation, current employment statistics, employment outlook for the future, available training programs, and bibliographical references.

Sample Naval Information:

```
?DESC 94364
 94364.      NAVY ENLISTED PERSONNEL
THE NAVY EMPLOYS ENLISTED PERSONNEL IN TWELVE OCCUPATIONAL
GROUPS: DECK, ORDNANCE (WEAPONS & EXPLOSIVES), ELECTRONICS,
PRECISION EQUIPMENT, ADMINISTRATIVE AND CLERICAL, ENGIN-
EERING AND HULL, CONSTRUCTION, AVIATION, MEDICAL, DENTAL,
STEWARD AND MISCELLANEOUS (LITHOGRAPHERS, DRAFTSMEN AND MU-
SICIANS).
---APTITUDES: GOOD PHYSICAL CONDITION; ABILITY TO WORK WITH
PEOPLE FROM ALL EDUCATIONAL LEVELS, RELIGIONS, RACES AND
GEOGRAPHICAL AREAS, AND WITH VARIED ABILITIES; LEGAL COMMIT-
MENT TO ENLIST FOR A FIXED PERIOD OF AT LEAST TWO, BUT USU-
ALLY THREE OR FOUR YEARS, PORTIONS OF WHICH WILL PROBABLY BE
SPENT AWAY FROM FAMILY FOR SIX MONTHS OR MORE AT A TIME.
---WORK SETTING: VARIES DEPENDING ON DUTIES AND LOCATION OF
ASSIGNMENT, BUT WORK MAY TAKE PLACE OUT-OF-DOORS ABOARD
SHIPS, SUBMARINES OR AIRCRAFT. WORK AREAS ARE SOMETIMES HOT/
COLD AND NOISY.  SHIPS ARE USUALLY MORE CROWDED THAN CIVIL-
IAN WORK SPACES.  WORK ABOARD SHIP SOMETIMES REQUIRES 16-
HOUR DAYS AND DEMANDS UNUSUAL COOPERATION.
---TRAINING:  TRAINING IS PROVIDED IN ABOUT 70 OCCUPATIONAL
SKILLS.

---CURRENT EMPLOYMENT:  ABOUT 475,000 ON FULL-TIME ACTIVE
DUTY.
---WAGES:  $344/MONTH AT ENTRY.  HOUSING AND FOOD ALLOWANCES
AND A FEDERAL TAX ADVANTAGE AMOUNT TO ABOUT $170/MONTH MORE
FOR A TOTAL PAY THAT IS COMPARABLE TO CIVILIAN PAY OF ABOUT
$514/MONTH.  RAISES TO A COMPARABLE PAY OF ABOUT $575/MONTH
CAN BE EXPECTED IN THE FIRST YEAR.  EXTRA PAY IS RECEIVED
FOR SUBMARINE AND OTHER HAZARDOUS DUTY.  MEDICAL AND DENTAL
CARE IS FREE.  AMOUNT OF OFF-DUTY TIME DEPENDS ON TYPE/LOCA-
TION OF ASSIGNMENT.
---OUTLOOK:  SLIGHT SHORTAGE OF QUALIFIED PERSONNEL.  OPPOR-
TUNITIES ARE EXCELLENT FOR QUALIFIED PERSONS OF BOTH SEXES.


FOR WAYS TO PREPARE, TYPE IN 'PREP 94364.      '.
FOR BOOKS, TYPE IN 'BIB 94364.      '.
OIAS/PORTLAND METRO/DEC 26 1975
```

```
?PREP 94364
 94364-      NAVY ENLISTED PERSONNEL
---SKILLS: NAVY OCCUPATIONS ARE SIMILAR TO CIVILIAN OCCUPA-
TIONS, BUT SAILORS ALSO MUST BE READY TO PERFORM THEIR WORK
UNDER COMBAT CONDITIONS DEMANDING STAMINA, COURAGE AND TEAM-
WORK.
---PREPARATION: GENERALLY A HIGH SCHOOL EDUCATION IS PRE-
FERRED FOR ENLISTMENT IN THE NAVY. APPLICANTS FIRST TAKE
TESTS TO INDICATE INTERESTS & ABILITIES. IF ACCEPTED INTO
THE NAVY, THE RECRUIT CAN BE GUARANTEED INTRODUCTORY TRAIN-
ING IN THE CAREER FIELD HE OR SHE CHOOSES. MORE ADVANCED
TRAINING DEPENDS ON AVAILABLE OPENINGS. TRAINING IN A CAREER
FIELD CAN VARY GREATLY; FOR EXAMPLE, SOME POSITIONS IN NU-
CLEAR POWER OR ELECTRONICS MAY TAKE 18 TO 24 MONTHS OF
TRAINING WHILE SOME POSITIONS IN KITCHENS OR QUARTERMASTER'S
OFFICES MAY TAKE 2 MONTHS. ENLISTED PERSONNEL ARE ELIGIBLE
FOR TUITION AID PROGRAMS FOR OFF-DUTY CONTINUING EDUCATION
SPONSORED BY THE NAVY. THE FOLLOWING PROGRAMS INTEND TO PRE-
PARE AND QUALIFY PERSONNEL FOR OFFICER COMMISSIONS: BROADEN-
ED OPPORTUNITY FOR OFFICER SELECTION TRAINING (BOOST); NAVAL
RESERVE OFFICERS TRAINING CORPS (NROTC); THE US NAVAL ACAD-
EMY; AND SPECIAL PROGRAMS IN SCIENTIFIC EDUCATION, NURSING
AND DIETETICS. TO ENTER OFFICER CANDIDATE SCHOOL (OCS), EN-
LISTED PERSONNEL MUST FIRST COMPLETE A 4-YEAR COLLEGE PRO-
GRAM & THEN COMPETE FOR LIMITED OPENINGS. OTHER PROGRAMS
AVAILABLE TO ENLISTED PERSONNEL DURING THEIR TOUR IN THE
NAVY INCLUDE: PROGRAM FOR AFLOAT COLLEGE EDUCATION (PACE);
SERVICEMEN'S OPPORTUNITY COLLEGE (SOC); PREDISCHARGE EDUCA-
TION PROGRAM (PREP); & DEFENSE ACTIVITY FOR NON-TRADITIONAL
EDUCATION SUPPORT (DANTES).
---TIPS: ADVANCEMENTS FOR NAVY ENLISTED PERSONNEL ARE DETER-
MINED BY (1) LENGTH OF TIME SAILOR HAS SPENT IN THE NAVY;
(2) LENGTH OF TIME SPENT IN PRESENT RATE; (3) QUALITY OF
WORK; (4) EXAMINATION SCORES; & (5) ANY SPECIAL AWARDS OR
COMMENDATIONS.

WHAT NEXT?
?BIB 94364

 94364.      NAVY ENLISTED PERSONNEL
'WORK IN THE NAVY' (VOLUMES I, II, & III).
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Switching from Work in the Navy to CIS Information

The student who begins his or her information pursuit with the Navy materials probably has a fairly solid idea that he or she is interested in a career with the Navy. As the student researches certain Naval occupations he or she may wish to know whether this Naval experience will be valuable in terms of securing a civilian job. By using the cross-reference systems

explained above such a student would discover which civilian job(s) was similar to the Naval job of his or her interest. Once the civilian title(s) was obtained, the student could go to the computer and/or Occupational Information printouts which accompany the needle-sort decks. All of the information contained therein such as occupational descriptions, employment forecasts, and training required could be utilized to compare the Navy with the civilian occupation(s).

A student with this motivation is, of course, not the only person who might shift from Work in the Navy to CIS information. However, this example should illustrate how the systems are designed to be used in this fashion.

THE FIELD TEST

The real test of the information system occurs when the material reaches the field. In this instance, the field test addressed three major topics:

1. How do students use the information? In answering such a question, one must inquire into the users' opinions of the quality, comprehensibility, and relevance of the material; and whether the volume of material is appropriate.[1] Finally, one must attempt to discover whether the material's location in the information system provides accessibility at appropriate times for the purpose of career development.

Obviously, natural use with unobtrusive evaluation is preferable. The need for quick returns from the present evaluation and the fact that it is a first effort prompted a more managed experimentation, with both the benefits and limits of that approach. The limits are that use is different in some respects from normal circumstances, so usage data must be interpreted cautiously. The advantage is that one can intensify exposure to the material and obtain early reactions. Thus, the second and third major topics of this evaluation are the opinions of students and staff who were asked to critique the material.

2. How do students appraise the material? Students were asked to review the material and their opinions were obtained in interviews. They were asked about its quality, whether there was superfluous information, how easy it is to use, and whether the material appeared biased.

3. How do teachers and counselors appraise the material? Staff were asked to critique the material and report their opinions of its probable impact on students and its likely utility in classes. Those critiques dealt specifically with the printed volumes, Work In the Navy.

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[1]The question of readability has been adequately addressed before, and material of this sort creates no problems of readability for high school students or adults. See Bruce McKinlay, Validity and Readability of the Occupational Information Access System "QUEST" Questionnaire, 1971, and Bruce McKinlay and Daniel Adams, Evaluation of the Occupational Information Access System as Used at Churchill High School, 1971.

Explanation of Pilot Test

The Naval material was installed in the counseling centers of 47 high schools in Oregon. These included settings where both computer and needle-sort versions of the information delivery system are in use. Eleven schools use the Career Information System needle-sort decks and thirty-six use the computer system. In addition, the material was tested in four ninth-grade career education classes. In all cases the counselors and teachers were allowed the maximum freedom possible in deciding how to use the material. The 47 counselors were requested to place Work in the Navy in locations near the computer or the needle-sort deck so that a student could easily find the material. The career education teacher was given a copy of the three volumes and asked to review them and decide how they would best be integrated with the career exploration curriculum.

The system used to monitor the results of the pilot test program included both questionnaires and personal interviews. First, 34 schools' students who used Work in the Navy and other parts of the Naval material in conjunction with the Career Information System filled out questionnaires indicating their reactions to the quality and utility of the material. Further, 18 counselors were interviewed, with an equal number of needle-sort deck and computer users comprising the sample. From these same 18 schools 12 students who had had an opportunity to review one or more of the volumes were also interviewed. Questionnaires were also administered to students in the four career education classes both before and after they had used the material.

Data from all the above sources will be used to evaluate how nearly Work in the Navy meets its goal of fully integrating high quality information on military jobs into a general-purpose career information system. The two major divisions for evaluation involve the materials relevance to the student's overall career planning process, and its utility, or ease with which it can be used. From this analysis observations will be made concerning how Work in the Navy and the other Naval information serves its purpose, as well as how to set up this type of integrated information system for the rest of the military and major civilian employers.

The integrated system which counselors were asked to pilot test can be easily summarized. CIS updated the computer system in Multnomah and Clackamas counties (part of the Portland, Oregon, Metropolitan Area) to include two new descriptions for the occupational specialties for Navy Enlisted Personnel and Navy Officers. For all current CIS occupational titles which have counterparts in the Navy, references were given in that occupations' Bibliographical file to the appropriate page number in Work in the Navy. Needle-Sort users were given an updated copy of the CIS Occupational Information book which included the same references to Work in the Navy in its Bibliographical files. Computer

users also found a sentence at the start of their computer run explaining that there was new Navy material in the program and that they could find reference to it in the Bibliographical file. Schools were given a seven week period at the beginning of the school year to pilot test the information.

Issues of Quality

There are many standards that career information must meet before it can be considered of high quality. The standards applied for CIS information include currency, objectivity, and relevance to the overall career planning process. Students, teachers, and counselors were asked to comment on all three areas in the pilot test of Work in the Navy[2]. Although users are not competent judges of currency and objectivity, and relevance is not an easy standard to define, it is important to understand users' perceptions. In this section an attempt will be made to draw an overall judgment concerning the relevance of this material to career planning by piecing together several pieces of information.

Overwhelmingly, students and staff believed the material in Work in the Navy is current and up to date. One counselor claimed that the pay scale changed as of November, 1975; (actually Naval salaries were raised five percent in October). This remark raises the important problem of updating. Statistics on pay and number of employees hired for a particular occupation are both important pieces of information which are up-dated every six months in the current CIS program. It seems desirable that any major expansion into the field of career information for specific employers should adhere to comparable standards. A permanent format for Work in the Navy would need to provide for updating or supplementation. This is not a minor problem.

Objectivity is, of course, an essential feature of any information system, particularly one dealing with a controversial area such as the military. While special efforts were taken to keep the material objective and impartial and most people in schools rated it "fair and impartial," there were a surprising number of counselors and students who felt that this material was slanted to favor the Navy (see following table).

Whatever bias others perceived, students in four, ninth-grade career exploration classes revealed no change in their general attitude toward the Navy. Both before using the material and afterward, about 40 percent described themselves as positive toward the Navy, another 40 percent remained neutral, and approximately 20 percent said both times they held negative attitudes.

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[2]In this section minimum attention is given to the Naval descriptions and various references added to the computer files as part of the project. Those will be discussed in the section on utility.

Objectivity of Work in the Navy

"People get an idea of what the Navy is like from many places; from friends, or from the movies, or from their parents. Sometimes the Navy sounds pretty good, sometimes not so good. Do you think the material is biased to make the Navy sound better or worse than it really is?"

	Students Answering Questionnaires (N=34)	Students Interviewed (N=12)	Counselors Interviewed (N=18)
Very biased in favor of the Navy	32%	0%	0%
Pro-Navy	21	12	17
Fair & Impartial	47	88	50
Anti-Navy	0	0	0
Very biased against the Navy	0	0	0
No opinion	0	0	33

One can only speculate on the reasons why these people believed the information to be biased. None of them could cite specific instances in the volumes which drew an inaccurate picture of Navy life. One likely reason for the skepticism over the objectivity of the material is a lingering anti-military bias in the communities and in the schools. About a third of the counselors contacted about the project were either reluctant to use the material or pessimistic over the reception it would receive from the student, because of this anti-military feeling in school. A predisposion against the military could lead one to label even the most objective information on the armed services as biased. Likewise, factual information that violates a popular misconception is always liable to suspicions of bias. The fact that no one who felt the volumes to be biased could cite examples of inaccurate information suggests that these counselors and students hold their opinions for reasons more related to their previous personal attitudes than to the material found specifically in Work in the Navy. Nevertheless, this fact does not decrease the importance of having career information not only be objective but also be perceived as objective by those who use it. Some way should be devised to make it more clear that this information has been compiled in an objective fashion and it should be reviewed further for subtile biases.

There appear to be essentially two types of students for whom this information should provide a useful supplement to their career exploration process: those who know that they are interested in the military and wish detailed information about the Navy, and those who are pursuing a career field and through the use of CIS discover that the Navy employs a sizable number of people in a similar occupation. For the first student Work in the Navy would encourage him or her to pursue further an idea already germinated while for the second the material might give the student an entirely fresh idea. It seems important that Work in the Navy relate successfully to the needs of both types of students.

The difference in enthusiasm between these two groups of students gives a good clue about which type of student benefits more. The student examining the military is best represented in this study by the students who were interviewed. Three-fourths of them were either actively pursuing military information or had already decided to join the Navy. Eighty-two percent of this group felt the material was relevant to their career decision-making process.

The student exploring a variety of career options shows up among the students filling out the questionnaire. A majority, 61 percent, either didn't know what type of work to go into or were exploring various career fields but not necessarily the Navy. Twenty-four percent claimed to be considering the Navy along with other possibilities, while only nine percent had decided to join the Navy. In this group, only 39 percent found the information highly relevant to their own planning, and 13 percent said it was not relevant at all.

Though these samples are small, they suggest that the current Naval information serves primarily individuals already oriented to military jobs. Many students are still perceiving the military as an alternative to employment rather than recognizing that in many respects it is best considered along with other employers. This mind-set, a carry-over from the days of the draft, is decreasing the utility of the information for students who are still exploring broadly, and the link must be made very clear.

Counselors were also split on the relevance of the information. When asked to assess Work in the Navy for their student body's overall career planning efforts, the counselors' responses provided no clear consensus. Thirty-nine percent of the counselors felt the material definitely was relevant to high school students' career planning. These counselors did not believe the information more relevant to one particular age group than to another and stated that high school students were ready to use information that is this specific in nature. At the opposite end of the spectrum were 11 percent of the counselors who believed the material to be for the most part irrelevant to their students' career planning. Between the two extremes were the half who placed qualifications on the relevance of the material. A third of the counselors indicated that only their seniors were prepared to deal with information that was this specific. Seventeen percent of the counselors believed the material to be relevant only for those students already interested in the military and felt that the majority of the student body would not find the volumes relevant to them.

There is promise that material of this nature (detailed information on specific employers) will become more widely used in the future. A substantial number of counselors remarked that new State of Oregon graduation requirements require that more comprehensive career planning programs be instituted in the schools than have been found in the past. The reasoning of these educators was that while today's students might not believe this material to be highly relevant, the goal of the schools was to provide a program which would increase the student's career awareness, likely to a point where they would understand the relevance of such material. A few of these educators mentioned that the material might relate only to this year's seniors, but as their career education programs to implement new State standards got underway, juniors and sophomore would begin to use such information also. This argument has some merit and the goal of not only tapping existing interest but using a career information system to expand the students' interests is certainly consistent with the philosophy of CIS. In this respect, a short test project is really inadequte to measure the relevance of Work in the Navy to career planning by the Oregon high school student. The simple fact that the material is now available may itself increase its relevance over a period of time.

The quality of the three parts of Work in the Navy was measured in the pilot test to see whether some topics seemed more pertinent than others. In the test version, the discussion of the special features of the Naval work environment, "The Navy as an Employer," appeared in one volume, the descriptions of individual enlisted ratings in a second, and material about officer ranks in a third. Counselors and students were asked to comment on the relevance of the work environment information in Volume I as compared to the specific job descriptions in Volumes II and III. Seventy-two percent of the counselors indicated that all three volumes were needed to provide adequate information on the Navy jobs. Any suspicion that general information is adequate for high school students was dispelled when no one in the schools felt that Volume I, even with its appendix relating Naval specialties to civilian occupations, was sufficient by itself, and twenty-two percent recommended keeping Volumes II and III and discarding Volume I. Students interviewed concurred with the majority of their counselors that all three volumes were necessary to provide the essential information. No student recommended eliminating one or more of the volumes from the set. Respondents to the student questionnaire also drew no distinctions among the value of the three volumes. Seventy percent felt Volume I told them what they wanted to know about work conditions in the Navy, 74 percent said Volume II similarly fulfilled its purpose in relation to Navy Enlisted Personnel, and 62 percent agreed that Volume III informed them adequately about Navy Officer jobs.

Although not many were willing to recommend completely eliminating one or more of the volumes, student use patterns and counselor opinions do indicate that the specific job descriptions for enlisted ratings contained in Volume II are used more than the general information contained in Volume I, or the descriptions of officers in Volume III. Sixty-seven percent of the students interviewed had used Volume II, 58 percent Volume I, and only 33 percent Volume III. In the ninth grade career education classes, 80 percent of the students used Volume II, while only 44 percent and 40 percent respectively used Volumes I and III. Among the counselors interviewed a third felt that Volumes II and III combined were more relevant to the students planning process than Volume I, while only 11 percent favored Volume I. These statistics indicate that the linkage between civilian occupations and Navy enlisted ratings is one primary attraction of Work in the Navy. Students and counselors see the discussion of "The Navy as an Employer" to be general background information and of limited interest. One counselor theorized that the reason students are less interested in the specific information found in Volume III than the similar type of information found in Volume II is that officer occupations in the military require long-term commitments that most students are not ready to consider at the high school age. Another thought the material on officers was not written as well.

Another method used to delineate how counselors and students felt about the relevance of this type of career information entailed asking them whether they would recommend expansion of this service to other branches of the military and major civilian employers. Seventy-eight percent of the counselors believed that volumes similar to Work in the Navy should be compiled on all the other branches of the services, among them were 23 percent who recommended expansion only if the material was significantly abbreviated. The remaining 22 percent of the counselors recommended against developing any further military information of this nature.

A like pattern appeared in response to the question whether similar information should be developed on specific major civilian employers. Sixty-one percent of the counselors gave an unqualified yes, with 17 percent encouraging expansion if the material was shorter and 22 percent recommending that such information not be developed.

Among the students, two-thirds wished to see similar information developed on the other services while a quarter of them said no further military information should be developed. Fifty-eight percent of the students interviewed recommended expansion into the civilian sector. Providing a more enthusiastic response to a similar question were those students filling out the questionnaire. A total of 80 percent of these students indicated that they would use books similar to Work in the Navy on other employers if they were available. (It should be pointed out that the question to these students was simply whether they would use material on other employers if it were available. Their responses were encouraging but are not strictly comparable to the answers given by students and counselors who were asked to make a recommendation on the desirability of expansion.) There appears to be general but not overwhelming support for developing similar information on the rest of the military.

Summary: Quality Issues

Taken as a whole, there is a consensus that this material is current and factual, though some users thought they detected a pro-Navy bias. Further there is a reserved conclusion that it is relevant to the students' career planning. Apparently the information better suits the needs of the military-oriented student than the student exploring careers generally. It may be that this split will always be the case but there is progress that must be made in educating students to the relationship between military and civilian jobs. There are indications that a trend towards better career education programs in the state may increase the use of this material, particularly among sophomores and juniors. Evaluation of the quality of the material showed that most believed that all three volumes should be retained although material about enlisted ratings is the most often used. A small majority recommended that this type of information be expanded to other branches of the military as well as major civilian employers. The data leads to the conclusion that this information has the support of counselors and students, but that it is somewhat unenthusiastic support. This tone was evident in the personal interviews, and supports the evidence. This low degree of enthusiasm for the material does not seem to stem from any identifiable weakness in the material itself, but from a lingering hesitancy about the military and ambiguity about the applicability of the information to career planning for the undecided student. Thus, the matter of integration of the material becomes a very important one.

Integration of Work in the Navy with Students' Career Planning

A primary objective for this project was the integration of military information into the on-going career information delivery system in a way that makes the Navy a part of the work world and relates it to career choice, rather than treating it as an alternative.

In trying to decide whether the information is conveniently available, it is useful to inspect the several levels of information in the system. The most general level of information is designed to stimulate career awareness and consists of a list of occupational titles related to individual preferences through the QUEST questionnaire. The categories Military Officers and Military Enlisted Personnel appear on such lists.

At the next level are 300-word occupational descriptions for the person exploring one or more career fields. These descriptions include names of occupational specialties, such as Naval Officers and Naval Enlisted Personnel in the military descriptions, along with requirements, outlook, and other information. Users also have access to computer files describing methods of preparation and descriptions of specialties, now including full descriptions of Naval Officers and Naval Enlisted Personnel. People satisfy their interest about many occupations at that level, but some choose to pursue a field in more depth. For the serious inquirer, the third level includes names of people to visit or books to read (like Work in the Navy), which are identified but not actually contained in the computer. While this report concentrates on Work in the Navy, an appraisal of the entire project requires attention to all of the additions to information about the Navy.

Occupational Lists

Some of the use of the System's military information can be identified from accounting records kept by the computer. The program does not keep records on individuals, but it does tally the components that are used.

Part of the evaluation was a review of the accounting files for 12 Portland Area high schools who use the computer system. During the Fall of 1975, those schools recorded two thousand uses of the computerized career information system. Military officers appeared on the lists of 21 percent of the students and Enlisted Personnel appeared 9 percent of the time. Thus the career opportunities in the military are being identified as possibilities for a substantial percentage of the young people who use the Career Information System.

Occupational Inquiries

Students inquire about occupations that they are curious about, fantasize about, or that are career entry points for young people. Thus professional athletes, law enforcement officers, flight attendants, lawyers, and secretaries get a lot of attention. An average use of the computerized system includes two or three occupational descriptions, as well as some examination of methods of preparation and programs of study; about half the time it involves use of the questionnaire.

Diversity characterizes students' occupational interests. Even the most popular occupations rarely account for more than five percent of the inquiries, and the rest of the inquiries are spread broadly among the various career fields. Thus it is quite impressive to see inquiries for information about military and Naval officers in two percent of the uses and almost as many for military and Navy enlisted personnel. In fact, one or another of the military descriptions was among the top ten occupations in four of the twelve schools whose data were reviewed. During this short experiment in just two counties, a hundred students sought information from the computer about military opportunities. Projected for the state, such usage would mean at least three thousand inquiries. These data must be interpreted cautiously. On the one hand they measure only one part of the information available, and on the other hand the amount of usage is certainly attributable in part to the newness of the Navy information and the evaluation effort. Wherever usage of the computerized information would finally stabilize, it apparently would be substantial.

Within this context of inquiry for general information about the Navy, it is possible to examine the use of the most specific information Work in the Navy.

Use of Work in the Navy

The methods counselors and teachers chose to expose the material to students, when combined with statistics showing how the students actually became aware of the availability of Work in the Navy, provide one indication of how successfully this test program has integrated the printed military information with the current CIS job information system.

Of the 18 counselors interviewed, half chose to place the volumes near their computer terminal or needle-sort deck and allow students to use them according to their own individual interest and initiative. The other half used the material under more controlled circumstances; 33 percent of the counselors actively encouraged students to use the material and 17 percent used it in career education classes. Let us first examine the structured uses. In many cases, counselors referred to Work in the Navy when students showed an interest in that field. One observed that CIS participation added credibility, whereas material directly from the Navy would seem more promotional.

In one classroom the teacher of four ninth-grade career education classes decided to use the volumes of Work in the Navy in studying military careers. The majority of the students in the classes had taken the Armed Services Vocational Aptitude Battery (ASVAB) and were given their results from this test on the same day they were exposed to the Navy material. Students were encouraged to choose ASVAB aptitude categories in which they scored well, then check the CIS list of jobs, the cross-reference indexes in Work in the Navy, and the Naval descriptions to look up those Navy jobs which related to the civilian occupations and their ASVAB scores.

Military-Civilian Cross-Reference

This raises the question of how to link Navy and civilian jobs. A primary component of this project is the cross-reference system designed to relate current CIS civilian job titles with their Naval counterparts. This cross-referencing took several forms. For each occupational category in the Career Information System, all three volumes show the corresponding Navy enlisted and officer specialties. This part of the integration scheme has proved successful. The four ninth-grade career education classes were asked how easy it was for them to use the cross-reference indexes. Sixty-one percent of those polled indicated that the indexes were either very easy or easy to use and another 30 percent said they were of average difficulty. The fact that only nine percent of the students in this relatively young age group said that the cross-reference was hard or very hard to use says much for the utility of that simple referencing device. Its success is important to the integration of the Work in the Navy in the other major information systems besides CIS, for each has its own occupational categories. Apparently a series of indexes to a standard set of Navy materials would be a satisfactory linking device.

Turning to independent usage, there are strong indications that students have trouble seeing the link between CIS and the printed information without prompting by a teacher or counselor. Over a seven week period only 34 students filled out the questionnaires which were located near the volumes of Work in the Navy. There were students who used the material and didn't fill out a questionnaire, but it is still safe to conclude that usage was light. This low usage results partly from the short duration of the test, but it also indicates that there is something about the manner in which Work in the Navy has been integrated with the rest of the system which does not facilitate its usage. There may be too large a break between the general, career exploratory material in CIS and the specific employer information in Work in the Navy. A sizable percentage (44 percent) of the counselors interviewed were of the opinion that the two systems definitely need to be better integrated.

Currently, a student is referred to the Navy information primarily in the Bibliographical file for the 128 civilian jobs which have Naval counterparts. The Bibliographical file is not one of the most heavily accessed CIS files, being accessed about one-tenth of the time. Further reference points may be needed, though they must not distort the career exploratory process for those who would find specific employer information more distracting than helpful. The solution may be the addition of another computer file which is designed specifically to list major employers in each career field. Such a file is frequently requested, and seemingly would fill the gap between the career exploratory material now in the computer and detailed information about a particular employer such as Work in the Navy.

Change of Media

A correlary question concerns the shift from computer to books. The current format requires computer users to switch media from computer printouts to books in order to use Work in the Navy, while requiring needle-sort users to switch from one book to another. This change in media for computer users is apparently a significant variable; a full 67 percent of interviewed computer-use counselors felt that a better integrated system was necessary while only 22 percent of the needle-sort users concurred on this. Two computer-use counselors explained that an attraction of the current CIS program is the medium of the computer. These counselors felt that students would be reluctant to shift media and read a book after receiving their information from a computer terminal. On the other hand 44 percent of the needle-sort use counselors claimed that students are accustomed to using the books of computer printouts which go with their system and that Work in the Navy was similar enough in format that its book form would not preclude its use. The problem of linkage seems to be concentrated in the computer system and among students exploring occupations generally.

Turning back to Work in the Navy, let us pursue the question of whether the three volumes are easy to use as a self-contained unit. In other words, will students find the information in Work in the Navy easy to understand and use. The answer appears to be a qualified yes. Seventy-five percent of the students interviewed felt that the volumes were generally quite easy to use while a full 91 percent of the students filling out the questionnaire found Work in the Navy either very easy, easy, or of average difficulty to use. The four ninth grade career education classes deviated only slightly with 81 percent of the students claiming that they found the volumes either very easy, easy or of average difficulty to use. Counselors were somewhat less convinced, as a bare majority felt the volumes were easy to use.

There is, however, a significant minority of students and counselors who feel that the volumes are simply too long, and this issue is indirectly related to use. As a rule the shorter the information the more likely it is to be used. Thirty-three percent of the students felt the material was definitely too long and 22 percent of the counselors agreed. In seeming disagreement with this view were those students who used Work in the Navy

with CIS as part of a general career exploration (i.e., those who filled out questionnaires). In response to the question "If similar books about other employers were available how much information would you want in them?" 64 percent said approximately the same, 27 percent wished more or lots more information with only nine percent desirous of less or much less data. Concurring with these students were 39 percent of the counselors who expressly said that the length of the material was not a problem affecting its use. Here again the needle-sort users made the point that Work in the Navy is no longer than other highly used CIS books, although this time computer and needle-sort users agreed on the extent of the length problem.

Impact

A final issue is that of impact. Impact other than continued use is extremely difficult to measure, especially in such a short time, partly because the impact is psychological and hard to measure and partly because the measurable impacts usually occur later, when career decisions are implemented and young people become either more or less successful or satisfied members of the labor force. Some studies indicate positive long-run influences of labor market information.[3] Here we are limited to immediate and often subjective measures.

The students interviewed were asked how much effect they thought Work in the Navy had on their career plans. Half said it had a definite effect, with a positive influence reported by one-fourth who said it encouraged them to pursue the Navy as a career. The other fourth said it made them think the Navy might not be the best place for them.

The ninth-grade career exploration classes also indicated that the material moved them a step closer to making up their minds about the Navy. They were asked "what is your attitude toward possible employment by the Navy?" Before using the material 61 percent were indifferent, saying they hadn't considered it at all or hadn't decided whether they were interested or not. After using the material only 38 percent were in that category, while most of the rest indicated they were "probably interested" or "probably not interested."

One measure somewhat removed from the issue of the overall relevance of Work in the Navy to career planning was an attempt to measure change in knowledge. The questionnaires administered to four ninth-grade career education classes sought to determine if students had gained any knowledge about the Navy by using the volumes for a brief period. Before using the material students were asked 11 questions which required some knowledge about the Navy to answer correctly. After the volumes had been used, a similar 11 questions were asked. Unfortunately, the questions emphasized general Naval information rather than the link to civilian occupations that the teacher emphasized, and the average difference between the two tests was a gain of only two percent in the number of correct answers.

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[3]See Herbert S. Parnes, "Improving Job Information: Its Impact on Long-Run Labor Market Experience," in Seymour L. Wolfbein, Labor Market Information for Youths (Philadelphia: Temple University Press), 1975.

Action is another measure of impact. Counselors cited two instances of high school seniors who enlisted in the Navy following use of the material. How much those actions are attributable to the information and how much to other factors is a difficult question but impact is indicated.

Summary of Integration Issues

Career information serves multiple purposes: to increase awareness, to relate jobs to individual interests and abilities, and to aid in making choices. The Naval information contained in the computer seems to serve the purpose of awareness quite well and is accessed quite frequently. Work in the Navy seems usable in a variety of contexts, including both counseling sessions and classroom assignments, but the integration of Work in the Navy with CIS needs improvement. The low number of students who used the Navy information in conjunction with CIS information attests to this fact. Referencing the material in the Bibliographical file does not give it to all the students who need it, and the shift in media presents a problem for computer users. If these problems can be overcome the manner in which the two sets of jobs have been cross-referenced appears clear enough to allow a student to use the Navy material easily. Also encouraging are statistics which show the overall ease with which Work in the Navy can be used. The volumes may need to be shortened, but from the standpoint of utility, this is not the biggest problem. Despite the short term of this test and the problems of measuring impact, Work in the Navy seems to aid a number of students in their career search.

Observations and Recommendations

In preparing career planning information about Work in the Navy, the research team intended to serve both the person with a recognized interest in the Navy and those exploring various careers.

Operations Research, Incorporated researchers successfully obtained the needed information and prepared it in the desired formats. The project clearly demonstrates one of its objectives, that employer information can be compiled and utilized in career planning. Moreover the resulting material can be flexible enough to stand alone as well as integrate with an existing information system. The material seems quite flexible in serving the Navy-oriented person. It acts as a reference for counselors, is usable as instructional material in career exploration courses, and can be used as part of the Career Information System. For the person exploring careers through the computerized Career Information System, the material is still not integrated satisfactorily.

The material received a positive but somewhat unenthusiastic response in a field test in Portland area high schools. At the most general levels, the computerized information received quite heavy use and there are indications that continued use may produce expanded use of the printed materials, so statements made at this time are more in the nature of observations than final conclusions.

Replication and Further Research

A strategic decision must now be made whether to drop Work in the Navy, continue it as a pilot effort, or implement it nationally. There is still much to be learned about preparing and delivering career planning information about specific employers and there is still need for experimentation and evaluation of alternative approaches such as Work in the Navy, The U.S. Army Career and Education Guide, the Military-Civilian Occupational Source Book, and others. Nevertheless, enough is known to warrant continuation and much of what needs to be learned can be learned only in an operational environment.

Recommendation. The Navy Recruit Command should continue Work in the Navy, preferably in an operational mode.

It is clear from this experience that preparation of material about the Navy requires direct access to Naval information sources in the Pentagon. Further, the need for impartiality and the appearance of impartiality is demonstrated.

Recommendation. For at least the next year, development of Work in the Navy should be centralized in a research organization such as Operations Research, Incorporated that is independent of the Navy.

The project has shown that the information necessary to prepare a report such as Work in the Navy is available with a substantial research effort. There is no apparent need for radical changes, but a number of modifications can be identified that would be expected to improve the second edition. These include:

-Add information to Volume I which deals with injury and death rates. Statements that a sailor must be prepared to go to war will have more meaning if statistics detailing what this has meant in the past accompany it. Such figures might also reduce the feeling expressed by some that Work in the Navy is slanted to make the Navy appear more desirable than it really is.

-Combine Tables 1 and 3 and combine Tables 4 and 5 to show the relation of officer and enlisted positions and shorten the material.

-Combine the material into one volume, thus eliminating some duplicating indexes.

-Edit all material with the goal of making it as short as possible, e.g., by substituting the brief reference to Volume I that appears as a footnote for the present listing of topics under "Additional Information." This omission will cut the length by approximately 65 pages. Starting job descriptions at the top of the page will save another 45 pages.

-Review "The Navy as an Employer" (Volume I) to shorten it, intensify its relevance to career planning, and assure that the employee's view is represented as actively as the employer's.

-Update all information and examine the formats for short-life information such as wage rates to insure that it can be updated with minimum effort.

These and other ideas arising from ORI and CIS experience can be examined in detail before the material for the second edition is prepared.

Recommendation. Writing guides should be revised when the second edition is initiated.

Improving Linkage with CIS

There are still many misconceptions about the Navy that need correcting. One is the idea that the Navy is primarily useful as a training ground for civilian jobs rather than being a major employer in its own right. Such perceptions intensify the gap between the career exploratory material in CIS and employer specific information of the type found in Work in the Navy. The system may be skipping a step in the present design for linking the two kinds of information, especially for computer users who must also change media when they move to Work in the Navy.

The solution may be an EMPLOYER file in the computer listing establishments that hire a particular occupation and providing brief information about them (including reference to complete information like Work in the Navy). Such a file has been requested frequently and prototypes have been popular with both students and counselors. From the point of view of this project, such a file would greatly increase the visibility of the Navy and the references to Work in the Navy without injecting them in places where they may be more distracting than helpful.

Recommendation. Career Information System should design a format and research procedures required to produce an Employer file and discuss with the Navy and other employers the feasibility of implementation.

The fact that integration with CIS was not completely successful for one of its intended audiences does not mean it was a total failure, either. In fact the links that were built were quite successful. The most important links are the military-civilian cross-reference indexes.[1] They were both technically feasible and easy for students to understand and use. This is an important finding. It indicates that a standard set of Navy material can be indexed to existing information delivery systems; it is not necessary to write separate material for each system. This approach is not only efficient, but also introduces and retains the character of the Navy personnel system.

Recommendation. Work on future editions of Work in the Navy should include preparation of indexes to each of the major career information delivery systems where Work in the Navy will be used. The appropriate index can then be bound in the volumes that will be used with each system.

Looking to the broader implementation of career information about the Navy and other branches, we can readily see that other state occupational information systems should be involved. All need to decide on an approach to handling military information, and people will be served best if there is some coordination.

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[1] Work in the Navy was published before release of the Military-Civilian Occupational Source Book (Department of Defense, July 1975). The Work in the Navy indexes need to be checked with this source for consistency.

Recommendation. The Department of Defense should co-sponsor with the Labor Department's National Occupational Information Service a workshop of selected researchers, recruit commanders, and occupational information system directors to review the results of military career information projects such as the present one and recommend approaches for the Defense Department and state occupational information systems to follow.

The workshop should take full advantage of research and demonstration completed to date and its schedule should provide opportunity for discussion and recommendations. An early spring 1976 date would be appropriate.

Continuing research on both short-range and long-range issues is needed. Among the short-range topics is the issue of perceived bias identified here. More detailed interviews with users and critiques by occupational information experts could be undertaken immediately and would produce useful guidelines for future editions. A longer-range question that can be ideally studied in cooperation with the Navy is the long-range impact of such information on recruitment and first-enlistment success of people who have used Work in the Navy.

Recommendation. The Navy should commit a small, continuing budget for short-range and long-range research as long as it produces career planning information.

IV. REVIEW OF OTHER CAREER INFORMATION SYSTEMS

OVERVIEW

The interests of the Navy indicated that the work done in relation to the Oregon CIS should be as useful as possible in other states. In order to work toward those interests, the study team examined three other computer-assisted systems of career information delivery. The purpose of that examination was to identify information, beyond the specifications of the Oregon CIS, that would be needed to make the information prepared for Oregon applicable in other states. The three systems studied were the Computerized Vocational Information System (CVIS), the System of Interactive Guidance and Information (SIGI), and the Vocational Information through Computer Systems (VICS).

COMPUTERIZED VOCATIONAL INFORMATION SYSTEM (CVIS)

This description of the CVIS is based upon information provided by the International Business Machine (IBM) Corporation and by N. W. Ayer and Son, Inc. The N. W. Ayer and Son firm is attempting to integrate Army and other military information into the CVIS.

The CVIS is the result of a development project carried out by IBM, initially in the state of Illinois. Vocational information delivery is a part of an all-purpose system of storage and retrieval of student information for the various purposes of students, teachers and administrators. Provision of career information is, however, a major focus of the project and its developers.

Junior High School Level

In accordance with the general literature on career education, the CVIS provides general exploratory information at the junior high school level. This information is designed to help the student understand the differences among personality types and the vocational preferences that are associated

with each type. The first portion of this process depends on a questionnaire of 30 items that assist the student in examining his own traits, goals, activities, interests, abilities and school achievements. Based on the responses to the questionnaire, the computer suggests functional areas of work that will probably be most suitable for exploration by the student. The student may then explore those areas of work (and others) through the use of audio-visual materials.

The student can then continue the process of comparing his response to the "ideal" personality types and to the work areas as they relate to personality characteristics, activities, values, roles preferred and abilities. Subsequently, the student can again use filmstrip-tape units to explore 20-30 specific occupations within the work areas he chooses. He can then make a choice of which occupation he likes best (predictably, a tentative choice given his age and experience). The student can follow up his exploration of that occupation, especially the type of high school program that will offer the best preparation for the occupation.

Secondary School Level

For secondary school students, the CVIS provides the means of unifying the available information about educational opportunities, course selection and entry jobs. The information package and the exercise of the CVIS programs are intended to stimulate career exploration whether or not the student has used the system during junior high school.

In a fashion similar to that described above regarding the junior high school program, the high school student conducts an exploration that is intended to lead him to tentative occupational choices. The student can then explore those occupations by reading 50-word descriptions of his choices. The descriptions are accompanied by occupational briefs that detail job duties, training requirements, working conditions, employment outlook, earnings and sources of additional information.

The CVIS also has separate information branches concerning students' planning for various paths of career development including:

- Four-year colleges
- Local community colleges
- Local technical and specialized schools
- Local apprenticeships
- Local jobs
- Military information
- Select-a-Course (guidance on selecting courses within the school or school system)
- Financial aid.

N. W. Ayer and Son, Inc. has been working with the CVIS project to integrate military occupational information into the program.

SYSTEM OF INTERACTIVE GUIDANCE INFORMATION (SIGI)

This review of the SIGI is derived from information provided by the Educational Testing Service (ETS) and by Dr. Martin R. Katz, the principal director of the SIGI project for ETS.

The SIGI is being developed by the Educational Testing Service and has been supported by the Carnegie Corporation and the National Science Foundation. The SIGI is primarily oriented to community and junior college students but is adaptable to other student age groups. Like the other career information systems described in this section, SIGI is designed to develop the students' ability to make free, competent and rational career decisions.

Values

The SIGI depends most heavily on the student's self-reported values structure. The system defines for each student ten occupational values that the authors of the system believe are the primary dimensions of personal needs and occupational characteristics: high income, prestige, independence, leadership, security, interest, variety, leisure, altruism and early entry. The student must rank the importance of these values to him. The ranking of values is then tested by the student in a number of games (any number the student wishes) in which one value is played off against another. The results of the games, the inconsistencies between the games' results, and the value rankings the student originally set are displayed for the student. The student may then adjust his original ranking repeatedly until he crystallizes his view of his values profile.

Information

Having developed his values profile, the student can specify levels of satisfaction he requires for the five values he holds to be most important. The SIGI responds by providing the student with a list of occupations that meet or exceed the student's specifications. By varying either the priority of values or the levels of satisfaction specified for the values, the student can generate alternative lists of occupations for further consideration. In addition, by narrowing his specifications of need, the student can shorten the list of occupations. Broadening the specifications lengthens the list that the SIGI provides. About 150 occupations are currently in the SIGI. Those occupations in the system were selected because junior and community college interest in them has been very high.

At any point, the student can find occupational information on any three occupations simultaneously. Like other systems, SIGI provides data on the definition and description of the occupation, education, training and other requirements, income, personal satisfactions of the occupation,

conditions of work, and opportunities and outlook. Specific information relating to each of these categories is provided by SIGI in response to queries from the student.

Prediction

The prediction section of SIGI tells the student how, on the average, other students with similar test scores and grades favored in terms of grade achievement in specific courses at the local junior or community college. These data are the results of regression analyses of variables such as high school rank and scores on selected tests as reflected in local student records. The prediction section is intended to assist the student in adjusting his ranking of occupations in terms of desirability. If, for example, the student finds through SIGI that it is unlikely that he will complete an electronics course successfully, he will consider electronics courses to be less desirable and can then set other occupations as his priority for consideration.

Planning

The planning section of SIGI lays out the steps the student needs to follow to implement a career choice. The steps are presented in reverse order so that the student can see the full duration of the additional preparation required to implement his choice. The last step examined will be the student's selection of his courses at the junior or community college. Because of the rapidity of the computer's operations, the student can quickly end his examination of one career preparation plan and move to a plan for a different occupation.

VOCATIONAL INFORMATION THROUGH COMPUTER SYSTEMS (VICS)

This description of VICS was prepared by ORI from materials provided by the School District of Philadelphia and by Gary Brookstein, Coordinator of the VICS project in Philadelphia. The School District of Philadelphia, Pa., operates the VICS project for high school students.

Like the systems discussed above, VICS is a computer-assisted program that provides a means of career exploration and career planning. It is a joint venture of the Commonwealth of Pennsylvania and the School District of Philadelphia. All of the high schools in Philadelphia are involved.

The system provides occupational information, data on access to scholarships and other financial aid, and descriptions of available post-high school training. An additional "employer search" program is available for the student who has decided to seek employment immediately, either to secure his post-graduation future or because he is leaving school early. The information is heavily tied to the Philadelphia labor market.

Information

About 400 occupations are described in the system. The following dimensions of each occupation are covered:

- Definition of the occupation and its D.O.T. number
- General duties
- Related occupations
- Educational requirements of the occupation
- High school courses recommended for the occupation
- Interest factors
- Personality factors
- Physical factors
- Where the job is done
- Where in Philadelphia the job is done
- Current pay for the occupation in the Philadelphia area
- Benefits, working conditions, advantages and disadvantages
- Chances for advancement
- Future outlook locally and nationally
- Local training facilities and tuition fees if any
- Scholarship and financial information
- Schools outside the Philadelphia area
- Who to see, write or call for more information.

Students who know the title of the occupation they want to explore are referred by the computer to an alphabetical list of occupations and their identifying codes. Using the code number, the student can obtain the occupational information by typing in questions concerning the topics mentioned above. The student can continue asking the questions until his informational needs are satisfied or until he has exhausted the information available.

If the student has not or cannot immediately select an occupation for investigation, the VICS helps the student to consider work in more general terms that are used in colloquial expression. The computer explains to the student that work can be divided into areas of interest and by the level of education usually (or always) required of persons who work in each occupation.

The interest divisions of work that VICS describes for students are as follows:

- Service
- Business - selling
- White collar work

- Engineering, trade, technical and mechanical work
- Outdoor
- Science
- Cultural
- Arts and entertainment.

The educational levels are as follows:

- College beyond the bachelor's degree level
- Bachelor's degree - four years of college
- Associate degree or other two-year trade/technical programs
- Apprenticeship, trade/technical programs and business school programs less than two years in length
- On-the-job training
- No special training.

When the student then enters one interest area and one educational level into the computer, the computer provides the student with a list of all occupations that satisfy both criteria. The student can then ask the computer questions concerning any of the occupations.

For those students who wish to plan for further education or training, VICS provides information on how such training can be obtained for each occupation and financial aid available for persons who want the training. The student can use this directly, whether or not he uses any other part of the system.

Those students who have decided to seek employment immediately can select to use the "employer search" program. That program consists of an extensive list of employers of persons in various occupations. Over 6,000 employers in the Philadelphia area are included in the file. The list shows the employer's name, address, telephone number, and the skill and education qualifications required by employers. The student can use this "employer search" program to obtain initial leads on where jobs may be found.

All of the information in the VICS data banks is updated at least once a year.

COMPARISON OF MATERIALS PREPARED FOR THE OREGON CIS WITH INFORMATION NEEDS OF CVIS

The information developed for the Oregon CIS will satisfy the needs of the Computerized Vocational Information System. N. W. Ayer and Son, Inc. has already developed U.S. Army input for that system. The key element that must be added to the Navy Oregon information to make it compatible with the CVIS is a Dictionary of Occupational Titles (D.O.T.) equivalent for Navy occupations. The determination of comparability of Navy occupations with D.O.T. coded occupations in the civilian sector has been accomplished in the Department of Defense Military-Civilian Occupational Source Book.

TABLE 1

COMPARISON OF MATERIALS PREPARED FOR THE OREGON CIS WITH INFORMATION NEEDS OF SIGI

Items Covered by Oregon CIS Materials	Items Not Covered by Oregon CIS Materials
Definition of occupation	Level of skill in interacting with data, people, things
Description of work activities	Average salary of all people in this occupation
Where to get more information	Top salary possibilities
Education required (entry)	How salaries vary
Specific occupational training	Prestige level
Related college courses	Independence on the job
Personal qualifications	Variety
Other requirements	Job security
Beginning salary	Number of women in the occupation
Opportunities for leadership	
What field of interest	
Special problems	
Physical surroundings	
Leisure (hours)	
Fringe benefits	
Employment outlook	
Where the jobs exist	
Advancement	

TABLE 2

COMPARISON OF MATERIALS PREPARED FOR THE OREGON CIS WITH INFORMATION NEEDS OF VICS

Items Covered by Oregon CIS Materials	Items Not Covered by Oregon CIS Materials
Definition of the job	D.O.T. number
General duties	Personality factors
Related jobs	Where in Philadelphia the job is done
Education requirements	Future outlook locally
Recommended high school courses	Local training facilities and tuition fee if any
Interest factors	Schools outside the Philadelphia area
Physical factors	
Where the job is done	
Current pay	
Benefits, working conditions, advantages and disadvantages	
Chances for advancement	
Future outlook (national only)	
Scholarship and financial aid information	
Who to see, write or call for more information	

V. PROJECT RESULTS

OVERVIEW

The work performed under this contract took place in two phases. The first phase involved developing Navy career information materials for inclusion in the Oregon CIS. A key feature of the development process was the requirement to develop information that both satisfied CIS form and content requirements and, more importantly, satisfied career educators' standards for accuracy and objectivity. The first phase concluded with the publishing of the ORI technical report, Work In The Navy... and demonstrated that it was indeed possible to develop acceptable Navy career education materials for inclusion in an existing state career education program.

The second phase of the project involved the incorporation and field test of the materials in the Oregon CIS. This phase of the project was concluded with the submission of the CIS report to ORI on December 31, 1975.

A discussion of the project results and certain findings and recommendations are presented in the following portions of this section. The general areas discussed are:

- Development of Materials
- The Oregon Field Test
- Expanding the Use of the Materials.

DEVELOPMENT OF MATERIALS

ORI researchers successfully obtained the needed information and prepared it in the desired formats. The project clearly demonstrates one of its objectives, that employer information can be compiled and utilized in career planning. Moreover, the resulting material can be flexible enough

to stand alone as well as integrate with an existing information system. The material seems quite flexible in serving the Navy-oriented person. It acts as a reference for counselors, is usable as instructional material in career exploration courses, and can be used as part of the Career Information System. For the person exploring careers through the computerized Career Information System, the material is still not integrated satisfactorily.

While the development and publishing of the Navy career information materials were, in themselves, major project results, there are several points that can be made regarding lessons learned.

- No single Navy occupation accounts for 5 or more percent of the total national employment in that occupation. This information may be of general use when discussing career education programs and issues.

- Features of the Navy work environment which may be perceived as negative by some are nevertheless important and must be included if accurate perceptions of the Navy are to be developed.

- While Navy publications are helpful in some areas, by far the best sources of information are Navy uniformed and civilian personnel in the various offices at the Navy Recruiting Command and at the Bureau of Naval Personnel. Their cooperation and helpfulness were outstanding.

- Comparison of Navy officer and enlisted occupations to civilian occupational listings requires detailed examination of all available information. Very few Navy occupations are likely to be wholly equivalent to civilian counterparts.

- ORI was not word-limited in developing occupational information materials. Limitations on text size would no doubt increase the difficulty of providing an accurate view of Navy work.

- The changing Navy employment picture prompted use of "approximate" figures and careful selection of syntax in describing employment opportunities.

- Information reviews, while obviously mandatory, were not hurdles but rather very helpful and productive steps in the development of accurate materials.

THE OREGON FIELD TEST

The results of the Oregon field test are the most significant part of this report. While these results were stated in the full report of the Oregon CIS (in Section III of this report), they are repeated here so as to be included in this section dealing specifically with project results.

Quality Issues

Taken as a whole, there is a consensus that this material is current and factual, though some users thought they detected a pro-Navy bias. Further, there is a reserved conclusion that it is relevant to the students' career planning. Apparently the information better suits the needs of the military-oriented student than the student exploring careers generally. It may be that this split will always be the case, but there is progress that must be made in educating students to the relationship between military and civilian jobs. There are indications that a trend towards better career education programs in the state may increase the use of this material, particularly among sophomores and juniors.

Evaluation of the quality of the material showed that most believed that all three volumes should be retained although material about enlisted ratings is the most often used. A small majority recommended that this type of information be expanded to other branches of the military as well as major civilian employers.

The data leads to the conclusion that this information has the support of counselors and students, but that it is somewhat unenthusiastic support. This tone was evident in the personal interviews, and supports the evidence. This low degree of enthusiasm for the material does not seem to stem from any identifiable weakness in the material itself, but from a lingering hesitancy about the military and ambiguity about the applicability of the information to career planning for the undecided student. Thus, the matter of integration of the material becomes a very important one.

Integration Issues

Career information serves multiple purposes: to increase awareness, to relate jobs to individual interests and abilities, and to aid in making choices. The naval information contained in the computer seems to serve the purpose of awareness quite well and is accessed quite frequently. Work in the Navy seems usable in a variety of contexts, including both counseling sessions and classroom assignments, but the integration of Work in the Navy with CIS needs improvement. The low number of students who used the Navy information in conjunction with CIS information attests to this fact. Referencing the material in the bibliographical file does not give it to all the students who need it, and the shift in media presents a problem for computer users.

If these problems can be overcome, the manner in which the two sets of jobs have been cross-referenced appears clear enough to allow a student to use the Navy material easily. Also encouraging are statistics which show the overall ease with which Work in the Navy can be used. The volumes may need to be shortened, but from the standpoint of utility, this is not the biggest problem. Despite the short term of this test and the problems of measuring impact, Work in the Navy seems to aid a number of students in their career search.

Findings and Recommendations

Finding. A strategic decision must now be made whether to drop Work in the Navy, continue it as a pilot effort, or implement it nationally. There is still much to be learned about preparing and delivering career planning information about specific employers, and there is still need for experimentation and evaluation of alternative approaches such as Work in the Navy, The U.S. Army Career and Education Guide, the Military-Civilian Occupational Source Book, and others. Nevertheless, enough is known to warrant continuation and much of what needs to be learned can be learned only in an operational environment.

Recommendation. The Navy Recruiting Command should continue Work in the Navy, preferably in an operational mode.

Finding. It is clear from this experience that preparation of material about the Navy requires direct access to naval information sources in the Pentagon. Further, the need for impartiality and the appearance of impartiality is demonstrated.

Recommendation. For at least the next year, development of Work in the Navy should be centralized in a research organization such as Operations Research, Inc. that is independent of the Navy.

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Finding. Looking to the broader implementation of career information about the Navy and other branches, we can readily see that other state occupational information systems should be involved. All need to decide on an approach to handling military information, and people will be served best if there is some coordination.

Recommendation. The Department of Defense should co-sponsor with the Labor Department's National Occupational Information Service a workshop of selected researchers, recruit commanders, and occupational information system directors to review the results of military career information projects such as the present one and recommend approaches for the Defense Department and state occupational information systems to follow.

The workshop should take full advantage of research and demonstration completed to date and its schedule should provide opportunity for discussion and recommendations. An early spring 1976 date would be appropriate.

Finding. Continuing research on both short-range and long-range issues is needed. Among the short-range topics is the issue of perceived bias identified here. More detailed interviews with users and critiques by occupational information experts could be undertaken immediately and would produce useful guidelines for future editions. A longer-range question that can be ideally studied in cooperation with the Navy is the long-range impact of such information on recruitment and first-enlistment success of people who have used Work in the Navy.

Recommendation. The Navy should commit a small, continuing budget for short-range and long-range research as long as it produces career planning information.

EXPANDING THE USE OF THE MATERIALS

Use of the Navy career education materials has already expanded beyond that for which they were originally planned. ORI did not originally intend to publish the materials developed for the Oregon CIS as a separate technical report. However, for ease in handling (the materials amounted to 543 pages) the materials were bound in a single volume. Dr. Marshall J. Farr, Director, Personnel and Training Research Programs, Office of Naval Research, on viewing the materials, recommended publishing them as a technical report. The published report, Work In The Navy, was, in turn, reprinted and distributed to Navy recruiting offices by Cdr. John Brame, Director, Academic Community Liaison, Navy Recruiting Command. The report was also made available for use in the school for Navy recruiters where it is currently finding use as source material. Cdr. Brame has also provided copies on request to a number of professional educators and career guidance personnel.

The Navy Recruiting Command currently plans a second printing, which will incorporate information updates and a few revisions to the text. Planned distribution includes all recruiting "A" stations, district and area headquarters, and various career guidance offices and professional organizations.

ORI heartily endorses use of the materials in this and any other fashion deemed appropriate by Navy representatives. An area where the materials might be of some additional use is in the recruit training program where they might serve as supportive materials in indoctrination classes.

APPENDIX A

1974-75 CIS USERS AS OF APRIL 1, 1975

Agreements	Number of Users	Number of Institutions	Types of Institutions	Sites Using Computerized CIS	Needle-Sort Decks Being Used
SECONDARY SCHOOLS					
1. METCOM (Multnomah & Clackamas Cos.)	33,000 4,735	65	38 H.S. 4 J.H.S. 23 Elem.	38	57
2. Coos & Curry IED's	5,600	10	9 H.S. 1 Elem.	2	27
3. Douglas Co. IED	6,000	13	11 H.S. 2 Elem.	0	29
4. Jackson & Josephine Co. IED's	5,900	16	9 H.S. 7 J.H.S.	0	46
5. Linn, Benton & Lincoln IED's	10,748	31	21 H.S. 8 J.H.S. 2 Elem.	0	62
6. Marion, Polk, Yamhill IED's	16,000	35	25 H.S. 10 J.H.S.	6	96
7. Lane IED	12,000	42	20 H.S. 22 J.H.S.	42	19
8. Washington IED	10,000	14	6 H.S. 8 J.H.S.	9	17
9. Eastern Oregon Group (Baker, Union, Morrow, Umatilla, & Wallowa)	6,450	36	25 H.S. 10 J.H.S. 1 Elem.	11	47

Agreements	Number of Users	Number of Institutions	Types of Institutions	Sites Using Computerized CIS	Needle-Sort Decks Being Used
SECONDARY SCHOOLS (Cont.)					
10. Knappa High School	150	1	1 H.S.	0	1
11. Rainier High School	360	1	1 H.S.	0	2
12. Scappoose High School	250	1	1 H.S.	0	1
13. Crook Co. High School	190	1	1 H.S.	0	2
14. Bend School District	300	2	2 J.H.S.	1	1
15. Warrenton High School	50	1	1 H.S.	0	1
16. Tillamook High School	100	1	1 H.S.	1	1
17. Neah-Kah-Nie High Sch.	200	1	1 H.S.	1	0
18. Bend High School	850	1	1 H.S.	1	8
19. Madras High School	300	1	1 H.S.	0	3
20. Crane Union High Sch.	100	1	1 H.S.	0	1
21. Burns Union High Sch.	400	1	1 H.S.	0	2
22. Vale High School	100	1	1 H.S.	0	1
23. Vale Elem. School	100	1	1 Elem.	0	1
24. Nyssa High School	100	1	1 H.S.	0	1
25. Adrian High School	110	1	1 H.S.	0	1

Agreements	Number of Users	Number of Institutions	Types of Institutions	Sites Using Computerized CIS	Needle-Sort Decks Being Used
SECONDARY SCHOOLS (Cont.)					
26. Ontario High School	155	1	1 H.S.	0	1
27. Ontario Jr. High	100	1	1 J.H.S.	0	2
28. Hood River Sch. Dist.	385	3	2 H.S. 1 J.H.S.	0	7
29. Lakeview Sch. Dist.	100	1	1 H.S.	1	1
30. Culver Sch. Dist.	100	1	1 H.S.	0	1
31. Grant IED	200	4	4 H.S.	0	1
32. Wahtonka High School	100	1	1 H.S.	0	2
33. Marist High School	250	1	1 H.S.	1	0
34. Chemawa Indian Sch.	200	1	1 H.S.	1	0
35. $(CE)_2$ - Tigard	50	1	1 H.S.	1	0
36. Vancouver Public Sch. Dist. - Washington	1,920	9	9 J.H.S.	1	9
SUBTOTAL: Secondary Schools Only 36 Agreements	117,653	303	191 H.S. 82 J.H.S. 30 Elem.	117	451

Agreements	Number of Users	Number of Institutions	Types of Institutions	Sites Using Computerized CIS	Needle-Sort Decks Being Used
COMMUNITY COLLEGES					
37. Umpqua CC	200	1	1 CC	0	2
38. Lane CC	3,000	1	1 CC	1	0
39. Blue Mtn. CC	200	1	1 CC	1	0
40. Chemeketa CC	300	1	1 CC	1	2
41. Clackamas CC	500	1	1 CC	1	0
42. Linn-Benton CC	200	1	1 CC	0	2
43. Mt. Hood CC	2,500	1	1 CC	1	1
44. Portland CC	5,000	1	1 CC	1	0
45. Rogue CC	100	1	1 CC	0	3
46. Treasure Valley CC	200	1	1 CC	0	2
47. Southwestern Oregon CC	415	1	1 CC	0	3
SUBTOTAL: Community Colleges Only					
11 Agreements	12,615	11	11 CC	6	15

Agreements	Number of Users	Number of Institutions	Types of Institutions	Sites Using Computerized CIS	Needle-Sort Decks Being Used
FOUR-YEAR COLLEGES AND AGENCIES					
48. University of Oregon	100	1	1 college	1	3
49. Eastern Oregon State College	250	1	1 college	0	2
50. Youth Manpower Service Center (Portland)	300	1	1 agency	1	0
51. Bureau of Indian Affairs	100	1	1 agency	0	1
52. Oregon Corrections Div.	1,831	1	1 agency	3	1
53. Work Orientation Ctr.	60	1	1 agency	0	1
54. Neighborhood Youth Corps (Salem)	150	1	1 agency	0	1
55. Aid to Dependent Children	60	1	1 agency	0	1
56. Educational Talent Search Program	100	1	1 agency	0	1
57. Vocational Rehabilitation Divisions (10 agreements)	1,050	10	10 agencies	0	10
SUBTOTAL: Four-Year Colleges and Agencies Only					
18 Agreements	4,001	19	2 colleges 17 agencies	5	21

Agreements	Number of Users	Number of Institutions	Types of Institutions	Sites Using Computerized CIS	Needle-Sort Decks Being Used
TOTALS:					
66 Agreements	134,269	333	191 H.S. 82 J.H.S. 30 Elem. 11 CC 2 colleges 17 agencies	128	487

APPENDIX B

EXAMPLES OF OFFICER AND ENLISTED OCCUPATION DESCRIPTIONS

Appendix B contains examples of officer and enlisted occupational descriptions reproduced from Work in the Navy -- A Description of Navy Officer and Enlisted Occupations (ORI Technical Report No. 923). In addition to representing various ratings and categories of occupations, the descriptions selected serve as examples of the manner in which opportunities for women are discussed. Included are descriptions of the following ratings and officer categories:

- Aviation Machinist's Mate
- Gunner's Mate
- Personnelman
- Unrestricted Line Officer
- Engineering Duty Officer
- Medical Service Corps Officer
- Photography Limited Duty Officer
- Warrant Officer Aviation Operations Technician.

Aviation Machinist's Mate and Personnelman are examples of ratings to which both men and women are assigned. Gunner's Mate is an example of a rating to which women are not assigned. Unrestricted Line Officer, Medical Service Corps Officer and Warrant Officer Aviation Operations Technician are officer categories which include both men and women. Engineering Duty Officer is an example of a restricted line category to which women are not assigned because promotion laws make it more desirable for women to be in the unrestricted line or staff corps categories. Photography Limited Duty Officer is an example of the limited duty officer category to which existing law does not permit assignment of women.

AVIATION MACHINIST'S MATE*

NATURE OF THE JOB

Aviation Machinist's Mates are aircraft engine mechanics. They inspect, adjust, test, repair, and overhaul aircraft engines. They also take care of routine maintenance, prepare aircraft for flight, and assist in handling aircraft on the ground and on ships.

Aviation Machinist's Mates work on both reciprocal (piston) and jet engines, and on related systems including fuel, oil, induction, cooling, compression, combustion, turbine, and exhaust systems. They also work on helicopter engines and accessory equipment. Aviation Machinist's Mates inspect aircraft before and after each flight; conduct periodic major inspections and field test engines and related systems; adjust engine components such as fuel controls, pumps, valves, and regulators; remove, repair, and replace compressor and turbine blades and combustion chamber liners; trace fuel lines, clear strainers, and check valves and fuel cells for leaks or sediment; install and clean carburetors; and test flow, pressure, and operation of carburetors and water injection systems.

For routine maintenance and flight preparation, Aviation Machinist's Mates clean planes, lubricate engines and accessories, change tires, warm up engines and refuel gas tanks. They "preserve" engines and accessories (protect them from dust, corrosion, and damage when not in use) and "depreserve" them (put them back into service).

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* Each Aviation Machinist's Mate is involved in the general work of the Navy as well as in the work of his or her own "rating" or occupation. It is very important for each sailor to understand the general work of the Navy as well as the work of his or her own rating. The first chapter of this manual describes the general work of the Navy.

Aviation Machinist's Mates may have record-keeping, safety, and supervisory duties as well as mechanics duties. They keep inventories of engines, parts, tools and supplies; keep records on the performance of engines and related systems, on test results, and on repairs; inspect work areas, tools, and equipment for potential hazards; organize and give safety instruction applicable to their work; and supervise engine work centers.

WORKING CONDITIONS

Aviation Machinist's Mates work on the aircraft or in hanger shops aboard aircraft carriers or at naval air stations in the United States and overseas. Much of their work is done out of doors in weather good or bad, and often there is a high level of noise in the vicinity. When working on a flight line or on the flight deck of a carrier, in addition to high noise levels, there are the additional hazards of jet engine suction, jet exhaust, spinning propellers and moving aircraft. Aviation Machinist's Mates may volunteer for flight duty with aircrews.

Sea-Shore Rotation

Aviation Machinist's Mates spend approximately 8-10 years on "sea duty" during a 20-year period in the Navy. "Sea duty" includes all of the time during which a sailor is assigned to a fleet unit (a ship, squadron or fleet staff). Much of that time will be spent in port at home bases. Therefore, the term "sea duty" does not mean time away from home but rather time during which there will be some periods away from home.

The remaining 10-12 years of a 20-year period in the Navy will be spent on "shore duty," duty at permanent shore locations where the Aviation Machinist's Mate will provide support for fleet units.

Since Navy women do not serve aboard combatant ships, women in this rating generally work at shore facilities in the United States and overseas.

QUALIFICATIONS

Candidates must have good general learning ability, math skills to make a satisfactory score on the Navy Arithmetic Test, and mechanical aptitude. Related experience is helpful, as are courses in algebra, geometry, machine shop, and automobile and aircraft engines. However, no previous experience or training is required.

TRAINING PROVIDED BY THE NAVY

The Navy operates schools to teach the skills needed for this job. After recruit training, candidates are selected to attend Aviation Mechanical Fundamentals school. Graduates of that school may be selected to receive further training at the Aviation Machinist's Mate reciprocating engine and jet engine schools. Airmen who are not selected for the schools initially may receive training on the job and may take Navy correspondence courses to help them qualify for this special schooling at a later time.

Training for the job of Aviation Machinist's Mate covers:

- Math from arithmetic to elementary algebra, geometry, and trigonometry
- Basic principles of flight
- Principles of construction, weight, and balance of aircraft
- Construction and operation of aircraft engines
- Electrical and hydraulic principles as applied to aircraft propellers
- Use of hand tools, power tools, and measuring instruments
- Use of schematics for fuel, cooling, lubrication, and power transmission systems
- Procedures for engine maintenance, problem identification, and repairs
- Pollution problems and procedures for controlling pollution from incomplete combustion of fuels and from fuel or oil spills
- Safety precautions.

EMPLOYMENT OPPORTUNITY

There are approximately 13,500 men and women performing work in the Aviation Machinist's Mate rating, of whom about 10,500 are rated petty officers. Opportunities are excellent for qualified applicants.

ADDITIONAL INFORMATION

Chapter I, "The Navy as an Employer," of this manual contains important general information about the Navy. Some of the major topics discussed in Chapter I are listed below.

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GUNNER'S MATE*

NATURE OF THE JOB

Gunner's Mates are responsible for many different kinds of weapons and ammunition, from nuclear weapons to small hand guns. They serve as weapon operators, maintenance and repair personnel and munitions storekeepers; and they teach other personnel how to handle various kinds of guns, weapons and ammunition.

Gunner's Mates use and care for small arms (including automatic pistols, rifles, carbines and light machine guns). They take these weapons apart for cleaning and oiling, reassemble them, and make adjustments for proper firing. They do the same kind of maintenance, work and perform overhauls, on the larger guns carried aboard fighting ships. They also maintain missile and rocket launchers. This requires that the Gunner's Mates understand the operation of electrical, electronic and hydraulic equipment, in order to adjust and repair such equipment.

The maintenance and repair work done by Gunner's Mates involves the use of testing instruments, such as voltage and resistance testers, as well as the use of precision measuring instruments. Gunner's Mates also use blueprints, wiring diagrams and mechanical drawings in their work, and they often make their own sketches for use in repair jobs.

As munitions storekeepers, Gunner's Mates store and issue explosives. They also store, issue and repair field equipment such as packs, helmets, gas masks and bayonets. In addition, they are responsible for the safety of munitions storage facilities, or "magazines." They conduct inspections and check temperatures regularly, and they operate sprinkler and flooding systems to prevent and control explosions and fires.

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* Each Gunner's Mate is involved in the general work of the Navy as well as in the work of his own "rating" or occupation. It is very important for each sailor to understand the general work of the Navy as well as the work of his own rating. The first chapter of this manual describes the general work of the Navy.

During battle or practice exercises, Gunner's Mates act as fire control officers and take charge of a gun or turret (a tower-like structure on a ship, usually revolving, within which heavy guns are mounted). They may also place and fire explosives; direct operation of a battery of smoke screen generators; or operate missile and rocket launchers.

Administrative duties include inventorying weapons, keeping equipment performance records, making reports on inspections and repairs, and inventorying spare parts, tools and other working materials. In addition, ships have technical manuals which describe the theory, testing, operation and repair of weapons and weapon equipment. Gunner's Mates keep these manuals up to date by adding or changing information, and they recommend changes to the procedures in the manuals based on their experience in testing and repairing the equipment.

WORKING CONDITIONS

Gunner's Mates are assigned to all fighting ships, to nuclear weapons installations, to ordnance (weapons) depots, and to other shore facilities where large inventories of gunnery equipment are kept and maintained. Much of their work is done out of doors in weather good or bad. Conditions are sometimes hazardous, requiring much emphasis on teamwork and safety.

Sea-Shore Rotation

Gunner's Mates spend approximately 10-12 years on "sea duty" during a 20-year period in the Navy. "Sea duty" includes all of the time during which a sailor is assigned to a fleet unit (a ship, squadron or fleet staff). Much of that time will be spent in port at home bases. Therefore, the term "sea duty" does not mean time away from home but rather time during which there will be some periods away from home.

The remaining 8-10 years of a 20-year period in the Navy will be spent on "shore duty," duty at permanent shore locations where the Gunner's Mate will provide support for fleet units.

QUALIFICATIONS

Gunner's Mates need good general learning ability and a high aptitude for mechanical work. Because of the hazardous nature of guns and explosives they must also have self-confidence and the ability to remain calm under stress. Helpful preparation includes courses or other training in arithmetic, electricity, physics and shop, including shop mathematics. However, there are no requirements for previous education or experience to qualify for this job.

TRAINING PROVIDED BY THE NAVY

Candidates may receive training on the job, supplemented by studying Navy training manuals, or by attending Gunner's Mate school. Gunner's Mates learn how to:

- Prepare guns, mounts, gun battering turrets and associated equipment for firing.

- Align gunsights
- Adjust, repair and test fuze-setting devices
- Operate power-driven rocket launchers and associated equipment; prepare rocket ammunition and batteries for firing
- Attach wings and fins to missile bodies; mate and unmate missiles; assemble and disassemble missiles and missile containers; replace defective or malfunctioning missile components or modules; install and remove adaption kits and arming-fuzing devices in missiles
- Make operational tests of missiles in launching and handling equipment; take apart, inspect and service such equipment; conduct checks before and after firing
- Diagnose malfunctions and perform repairs on mechanical, electrical, electronic and hydraulic systems and parts
- Operate ammunition hoists and other ammunition handling equipment
- Mark and safely stow ammunition
- Safely handle and dispose of unexploded bombs, rockets and shells
- Package and unpackage nuclear weapons and components; make storage monitoring tests of nuclear weapons
- Maintain and repair the equipment used to handle nuclear weapons
- Disassemble, assemble, inspect and test nuclear weapons and components; replace components to repair or modernize nuclear weapons.

This list does not cover all skills that Gunner's Mates learn, but it illustrates the kinds of training skills they receive.

Training has a theoretical side as well to provide Gunner's Mates with the background knowledge they need to do their work. On the more theoretical side, training covers such topics as:

- Electricity and electronics as applied to electrical circuits in weapon aiming and control equipment, and in mounts, turrets and hoists.

- Hydraulics and pneumatics as applied to weapons and associated equipment.

- Mechanics - including principles and uses of basic machines; types and uses of nonsparking tools, torquing tools; uses of measuring devices; mathematical computations and methods used when preparing, cutting and bending piping and tubing.

- Drawing and sketches - including common symbols and basic layout mathematics

- Nuclear weapons - including principles of fission and fusion reactions; types and effects of nuclear explosions; types and characteristics of explosives contained in nuclear weapons; types and symptons of radiation exposure; effects of humidity, temperature, storage time, and rough handling on nuclear weapons; and cleaning solutions, lubricants, and preservatives used in maintenance of nuclear weapons.

EMPLOYMENT OPPORTUNITY

There are approximately 6,200 personnel performing work in the Gunner's Mate rating, of whom about 5,500 are rated petty officers. Shortages exist and opportunities are excellent for qualified applicants.

ADDITIONAL INFORMATION

Chapter I, "The Navy as an Employer," of this manual contains important general information about the Navy. Some of the major topics discussed in Chapter I are listed below.

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PERSONNELMAN*

NATURE OF THE JOB

Personnelmen provide enlisted personnel with information and counseling related to Navy occupations, opportunities for general education and job training, requirements for promotion, and rights and benefits. They also assist enlisted personnel and their families with special problems. Sometimes, for example, Personnelmen help enlistees get legal aid or help them get reassigned to stations closer to family members because of hardship situations.

In addition, Personnelmen have administrative and clerical duties. They keep records up-to-date, prepare reports, type letters and maintain files. In general, the work of Navy Personnelmen is similar to the work of personnel officers and guidance counselors in civilian jobs, although the work of civilians in the personnel field may require more formal education. Specific examples of these and other duties of Personnelmen follow.

Personnelmen conduct interviews and give tests to identify individuals' interests, aptitudes, educational and work backgrounds, and achievement levels. They analyze interview and test results as a basis for recommending job training, education programs, and work assignments for enlisted personnel. Personnelmen also provide information about reenlistment, retirement, and the benefits that go with each, and they explain Veteran's Administration programs and benefits. They help personnel apply for benefits and understand the regulations that govern benefit programs.

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* Each Personnelman is involved in the general work of the Navy as well as in the work of his or her own "rating" or occupation. It is very important for each sailor to understand the general work of the Navy as well as the work of his or her own rating. The first chapter of this manual describes the general work of the Navy.

Job analysis is another responsibility of Personnelmen. They identify the tasks involved in Navy jobs, or "ratings." Then they evaluate the physical abilities, mental abilities, training, and experience a person needs to do each task. From this kind of analysis, Personnelmen clarify the path of advancement in each rating. Navy enlistees can be told exactly what skills and knowledge they must show, and what training they must complete, to get into a rating and to earn promotions.

Personnelmen also collect and analyze data for Navy planning and management. For example, they prepare reports on the current use of manpower compared with needs for manpower (how many personnel are needed, the locations where they are needed, and the jobs for which they are needed). They prepare reports on the organizational structure of Navy units. These kinds of reports are used by Navy managers to improve the efficiency of operations.

Typing, file maintenance and other clerical duties are assigned to Personnelmen. They keep enlisted personnel records up to date; they prepare correspondence related to personnel administration; they complete forms and take care of other requirements for transfer and receipt of personnel in a command; they prepare identification cards, meal passes, leave papers and temporary orders.

WORKING CONDITIONS

Personnelmen work in office settings and are assigned to all types of ships and shore facilities.

Sea-Shore Rotation

Personnelmen spend approximately 8-10 years on "sea duty" during a 20-year period in the Navy. "Sea duty" includes all of the time during which a sailor is assigned to a fleet unit (a ship, squadron or fleet staff). Much of that time will be spent in port at home bases. Therefore, the term "sea duty" does not mean time away from home but rather time during which there will be some periods away from home.

The remaining 10-12 years of a 20-year period in the Navy will be spent on "shore duty," duty at permanent shore locations where the Personnelman will provide support for fleet units.

Since Navy women do not serve aboard combatant ships, women in this rating generally work at shore facilities in the United States and overseas.

QUALIFICATIONS

Personnelmen must have the ability to establish rapport and communicate effectively with other people. They must have above average general learning ability and a high aptitude for clerical work.

School courses in typewriting, public speaking and office practice are helpful, as is experience in personnel work, guidance and counseling, teaching, and recreation supervision. However, no training or experience prior to joining the Navy is required to qualify for the job of Personnelman.

TRAINING PROVIDED BY THE NAVY

Candidates for the job of Personnelman get their training through on-the-job instruction, along with individual study of Navy training courses. In addition, candidates must successfully complete Basic Personnelman School.

Personnelmen learn the following job skills and background information:

- Good interviewing procedures, including techniques for establishing rapport, standards of tact and courtesy in providing service to people, importance of maintaining a positive attitude when dealing with people

- Rights, benefits, and services available to active and retired Navy personnel and their dependents including: educational services in general, programs leading to higher education and/or commissioned rank, regulations concerning eligibility for service schools, sources of educational materials; qualifications for advancement in a Navy rating, job performance evaluation procedures, policy on promotions and change of job category; leave policy; policy on unauthorized absence, desertion and lost time; policy on enlistment, reenlistment, transfer discharge and release from active duty; travel regulations; medical benefits; survivors' benefits; Veteran's Administration regulations and programs

- How to administer, supervise, score, record, and file tests used in the Navy; how to interpret scores and convert raw scores to standard scores; how to evaluate test results in relation to information obtained in personal interviews

- Techniques of educational, occupational and other kinds of counseling

- Procedures for ordering, maintaining and issuing educational and training manuals and materials; accounting procedures for personnel materials

- How to perform job analyses, identify job requirements and rate job skills

- Methods used in organizational analysis and assessment of needs for manpower including: how to prepare charts showing division of authority and flow of work; how to evaluate work flow and procedures

for the purpose of finding ways to simplify them; procedures measuring work efficiency and productivity; how to conduct staffing surveys

- Basic office practices including typing, use of duplicating equipment and calculating machines; routine maintenance of office machines; file organization and maintenance; procedures for setting up new personnel records and for adding information to records; telephone procedures; preparation of correspondence according to Navy standards; and proper English grammar and punctuation.

The list does not cover everything Personnelmen learn, but it gives an idea of the kinds of skills and knowledge they gain in the Navy.

EMPLOYMENT OPPORTUNITY

There are approximately 7,700 men and women performing work in the Personnelman rating, of whom about 5,700 are rated petty officers. Opportunities exist for highly qualified personnel.

ADDITIONAL INFORMATION

Chapter I, "The Navy as an Employer," of this manual contains important general information about the Navy. Some of the major topics discussed in Chapter I are listed below.

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UNRESTRICTED LINE OFFICER*

NATURE OF THE JOB

Over fifty percent of all naval officers belong to the Unrestricted Line category. Unrestricted Line Officers are eligible to command the Navy's operating forces -- the ships, submarines, aircraft squadrons, operational staffs and fleets -- that carry out the Navy's mission. An increasing number of Unrestricted Line Officers participate in highly specialized nuclear propulsion training programs and become qualified to serve on and command the Navy's growing number of nuclear powered submarines and surface ships. Unrestricted Line Officers also command naval bases, naval air stations, and many of the other shore units and installations that support the Navy's operating forces. Unrestricted Line Officers may also function as members of joint Army-Navy-Air Force commands and as members of allied commands. High ranking Navy Unrestricted Line Officers may have overall command of the Army, Navy, Air Force and Marine Corps forces operating in an entire area (for example: the Navy admiral who is Commander-in-Chief, Pacific, has overall command of all of the United States Forces operating in the Pacific area). The highest ranking officer in the Navy, the Chief of Naval Operations, is an Unrestricted Line Officer.

Unrestricted Line Officers specialize in one of five areas: general line duties, air warfare, surface warfare, submarine warfare, or special warfare. General line duties include administrative tasks, personnel and program management tasks, general leadership tasks, or tasks performed while undergoing training for a warfare specialty. Many women officers in the Navy participate in general line duties. Air warfare specialists function as pilots and air crew in Navy aircraft and focus their efforts on the strategy, tactics and support requirements involved in conducting naval air warfare. Similarly, surface warfare and submarine warfare specialists man the Navy's ships and submarines and focus on

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* Each Unrestricted Line Officer is involved in some of the general work of the Navy as well as the work of his or her own "specialty" or occupation. It is very important for each officer to understand the general work of the Navy as well as the work of his or her own specialty. The first chapter of this manual decribes the general work of the Navy.

their particular specialties. Special warfare officers participate in such operations as explosive ordnance disposal, underwater demolition, riverine and coastal waters operations and SEAL Team (Sea, Air and Land) operations. These officers undergo highly specialized training for their unique operations.

Officers in all of these specialties share a common responsibility for providing leadership in all areas affecting the Navy's mission. As a result, they must have a general knowledge of operations, maintenance, administration, logistics and support functions. To gain such knowledge, Unrestricted Line Officers spend the first 12 to 14 years of active duty serving in sea and shore duty billets which afford them the opportunity to learn and develop the knowledge and leadership skills necessary for command. They are then selected for command of individual ships, submarines, or aircraft squadrons and for command of shore units and installations. Thereafter, they are selected for commands of increasing importance based on their leadership performance.

At some point during their first 12 to 14 years of active duty, many Unrestricted Line Officers participate in postgraduate studies and earn advanced degrees. But unlike Restricted Line Officers, Staff Corps Officers and Limited Duty Officers, they do not necessarily specialize in a particular field other than their warfare specialty. They return to billets of general leadership and command. However, they may use the knowledge gained in advanced education programs when they serve on Navy, joint or allied staffs.

A number of officers in the general line group join qualified air, surface and submarine warfare specialists in nuclear power training programs. Because the nuclear propulsion field is of such growing importance to the Navy, the entry programs for newly commissioned general line officers, as well as for previously qualified air, surface and submarine warfare specialists, are discussed below.

Entry Into Nuclear Power Programs

Air, surface and submarine warfare specialists are selected for entry into the nuclear power program by a selected process which includes record reviews and personal interviews.

Naval Academy, NROTC and Officer Candidate School students may apply for entry into the program prior to graduation. Minimal requirements in physics and calculus must have been satisfied and, if selected, entry into the nuclear power program would occur after graduation.

NESEP program participants may likewise apply for entry into the nuclear power program prior to graduation.

There are also two special entry programs:

Nuclear Propulsion Officer Candidate Program (NUPOC). The NUPOC program provides selectees with a guarantee of assignment to the nuclear power program prior to their entry into Officer Candidate School (OCS). Screening and selection of applicants, who must be college graduates with minimum qualifications in physics and calculus, are completed before entry into OCS. Candidates

enter the nuclear power program after successful completion of the regular OCS curriculum. (Note that regular OCS graduates can apply for the nuclear power program, but are not guaranteed entry as are NUPOC graduates.)

Nuclear Proplusion Candidate Scholarship Program (NPCS). The NPCS program provides an opportunity for entry into the nuclear power program for college or university students in one of two categories:

a) Students who are completing their second year in a college of university that does not offer an NROTC program;

b) Students who are completing their second year in a college or university but who have not participated in the available NRTOC program.

Applicants selected for the NPCS program attend a special six week course at OCS. They then receive a scholarship for the two remaining years of undergraduate study during which they participate in the NROTC program. (This may require a change of schools.)

Screening for the nuclear power program is completed before entry into the NPCS program, but candidates are not guaranteed assignment in the manner of NUPOC candidates. However, since they have successfully completed screening, the likelihood of assignment to the nuclear program is increased.

WORKING CONDITIONS

Unrestricted Line Officers serve aboard ships of every size from submarines to aircraft carriers. Air warfare specialists fly and perform as crew members in Navy aircraft. At sea, Unrestricted Line Officers frequently work in extreme weather conditions. Often, as when on a flight deck, conditions may be very hazardous.

When ashore, Unrestricted Line Officers generally work in office settings or in shop facilities at naval bases and naval air stations.

Sea-Shore Rotation

Most Unrestricted Line Officers begin their naval service on sea duty. In the case of naval aviators, nuclear submariners and some special warfare officers, the first part of their naval service will be spent in training in their particular specialty before joining a fleet. The first sea-duty tour is usually 3 to 4 years in length. A 3-year shore duty tour generally follows. Thereafter, Unrestricted Line Officers continue to rotate between sea duty and shore duty, with the normal tour being about 2-3 years in length.

"Sea duty" includes all of the time during which an officer is assigned to a fleet unit (a ship, squadron or fleet staff). Much of that time will be spent in port at home bases. Therefore, the term "sea duty" does not mean time away from home but rather time during which there will be some periods away from home. "Shore duty" is duty at permanent shore locations, where Unrestricted Line Officers provide support for fleet units or for the Navy in general.

Since Navy women do not serve aboard combatant ships, women Unrestricted Line Officers generally rotate among shore facilities in the United States and overseas. Also women aviators fly in non-combatant aircraft.

QUALIFICATIONS

To qualify for a commission in the Unrestricted Line category, it is necessary to have a bachelor's degree from an accredited college or university. Depending on the specialty chosen, entry level ages vary between 19 and 30. Graduates of the Naval Academy and graduates who participate in NROTC programs while in college are commissioned after graduation. Other applicants attend Officer Candidate School after which they receive officer commissions. Candidates must meet certain physical and medical standards depending on the particular specialty they have chosen.

EMPLOYMENT OPPORTUNITY

There are approximately 38,500 men and women Unrestricted Line Officers on active duty in the Navy. The number of new officers required each year depends on many factors. While the number of submarine applicants might be double the number of available openings, there may be a shortage of surface or aviation officers. Openings rely on such factors as the number of officers leaving the service, the number of ships in commission, or the number of ships planned for construction. However, opportunities do exist for highly qualified applicants.

ADDITIONAL INFORMATION

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ENGINEERING DUTY OFFICER*
(RESTRICTED LINE)

NATURE OF THE JOB

Engineering Duty Officers are both professional engineers and managers in the fields of ship design, construction, maintenance and repair and in ordnance (weapon) design, construction, maintenance and repair. They also play a key role in helping the Navy decide which ships and weapons to buy. Virtually every field of engineering is related to the work of Engineering Duty Officers. These officers must have a broad familiarity with all of the engineering subjects related to ships including naval architecture, marine engineering, and mechanical, electrical and electronic engineering. Each Engineering Duty Officer also specializes in one of a small number of more narrowly defined fields. These specialties include:

Deep ocean engineering	Shock and vibration
Salvage and diving	Electric power distribution
Underwater acoustics	Nuclear power
Satellite communications	Boilers
Hydrofoil design	Gas turbines
Non-destructive testing	Undersea surveillance

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* Each Engineering Duty Officer is involved in some of the general work of the Navy as well as the work of his own specialty or occupation. It is very important for each officer to understand the general work of the Navy as well as the work of his own specialty. The first chapter of this manual describes the general work of the Navy.

Electronic warfare	Electromagnetic radiation
Metallurgical engineering	Hydraulics
Lasers	Ballistics
Computer technology	

Engineering Duty Officers also perform important management duties. Because many Navy organizations are large and rely very much on modern technology, officers are needed who can combine engineering knowhow with managerial ability. As a result, Engineering Duty Officers take active roles in industrial, maintenance, financial, material and research and development management.

WORKING CONDITIONS

Engineering Duty Officers work in shipyards, on support and operational ships, and at management, research and educational facilities in the United States and overseas. As a result they work in a variety of conditions, performing indoor and outdoor activities aboard ships in all kinds of weather, and performing office functions, laboratory work and academic work while ashore.

Sea-Shore Rotation

When they begin their active duty with the Navy, persons who become Engineering Duty Officers normally serve 3 or 4 years as Unrestricted Line Officers, mostly on sea duty. They then take postgraduate training of from 1 to 2 years duration at the Naval Postgraduate School or at civilian universities. Following their graduate training, they become Restricted Line Officers in the Engineering Duty community. Then they begin a normal rotation of 3-4 years at sea, followed by 3 years ashore and so on until their period of naval service ends.

QUALIFICATIONS

The Engineering Duty Officer field is open only to persons who serve successfully as Unrestricted Line Officers during their first 3, 4 or more years with the Navy. They must have or clearly be eligible for postgraduate education, and they must have some engineering experience, preferably aboard ship during their early years in the Navy. A record of high achievement in college study is important, but a record of excellent performance as a naval officer is given even more consideration by the boards who select Engineering Duty Officers. These officers must also be physically able to stand the strain of duties afloat.

EMPLOYMENT OPPORTUNITY

Approximately 1,400 naval officers are currently serving as Engineering Duty Officers in the Restricted Line. About 150 of them are specialists in the fields related to ordnance engineering. The remaining 1,250 officers work in fields related to ship engineering. A shortage of personnel in the Engineering Duty field has existed since 1966.

At present, women are not appointed to the Restricted Line category because laws governing promotion of women make it more desirable for women to be in the Unrestricted Line or staff corps categories. However, some Navy women officers do perform tasks associated with Restricted Line specialties.

ADDITIONAL INFORMATION

Chapter I, "The Navy as an Employer," of this manual contains important general information about the Navy. Some of the major topics discussed in Chapter I are listed below.

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MEDICAL SERVICE CORPS OFFICER*

NATURE OF THE JOB

Medical Service Corps Officers, while not Doctors of Medicine themselves, work closely with the Navy's physicians, dentists, nurses and enlisted medical staff. They may be involved with direct patient care, hospital administration, medical research, or a wide variety of medical specialties. The Medical Service Corps is separated into six sections:

- Medical Allied Sciences Section, which includes approximately 25 specialties ranging over the physical and psychological sciences. Some examples of specialist positions are bacteriologist, biochemist, entomologist, medical technologist, physicist, psychologist, radiobiologist, radiation health, serologist, and virologist
- Medical Specialists Section, which includes the specialties of dietitian, occupational therapist, and physical therapist
- Optometry Section
- Pharmacy Section

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* Each Medical Service Corps Officer is involved in some of the general work of the Navy as well as the work of his or her own specialty or occupation. It is very important for each officer to understand the general work of the Navy as well as the work of his or her own specialty. The first chapter of this manual describes the general work of the Navy.

- Podiatry Section

- Health Care Administration Section, which includes general hospital or medical department managers or administrators and more specialized hospital food service administrators.

Personnel in all of these specialties perform the same functions that their civilian counterparts would perform. Many of the above specialties require knowledge and training at the master's degree level. All Medical Service Corps programs are open to both men and women except the Radiation Health program (under the Medical Allied Sciences Section) which is open only to men.

WORKING CONDITIONS

Medical Service Corps Officers may work in medical centers and naval hospitals in the United States and overseas. Major research activities are carried on both in the United States and overseas (primarily in California, Maryland, Illinois, Taiwan, and Egypt). Preventive medicine units, to which some Medical Service Corps Officers may be assigned, are located in California, Virginia, Hawaii, and Italy. There are also some shipboard assignments, usually to larger ships like carriers.

Assignment Pattern

All officers appointed directly from civilian life are initially appointed in the Naval Reserve and may request appointment in the Regular Navy after a prescribed period of active duty. Appointments are initially made in grades of ensign through lieutenant, depending upon the individual applicant's education and experience at time of appointment. Assignments are made on the basis of personal preference, career development considerations, and the needs of the Navy.

Active duty tours are usually 2-3 years in length. While most billets are shore billets in the U.S. and overseas, Medical Service Corps Officers can expect one or two sea duty tours during a 20 year career.

"Sea duty" includes all of the time during which an officer is assigned to a fleet unit (a ship, squadron or fleet staff). Much of that time will be spent in port at home bases. Therefore, the term "sea duty" does not mean time away from home but rather time during which there will be some periods away from home. "Shore duty" is duty at permanent shore locations, where Medical Service Corps Officers provide support for fleet units or for the Navy in general.

Since Navy women do not serve aboard combatant ships, women in the Medical Service Corps rotate among shore facilities in the United States and overseas.

QUALIFICATIONS

A candidate must be between 18 and 32 years of age to be appointed in the grade of engsign. Minimum age requirements for the grades of lieutenant-junior grade or lieutenant are 33 and 39 years, respectively. Extensions may be made for prior active service (not to exceed 36 months).

Minimum education requirements are as follows:

- Medical Allied Science Section— completion of all requirements for a Master's Degree from an accredited college or university in or related to the specialty applied for; exceptions are made for the specialties of aerospace physiology, radiation health, and medical technology, which require only a baccalaureate degree in physics, chemistry or one of the biological sciences

- Medical Specialists Section— A baccalaureate degree from an accredited college or university in the specialty applied for, plus certification by the American Medical Association for the specialties of Occupational Therapy and Physical Therapy

- Optometry Section— A Doctor of Optometry degree from an accredited college or university

- Pharmacy Section— a baccalaureate degree from an accredited college or university with a major in pharmacy, plus evidence of registration as a pharmacist in one of the states or the District of Columbia

- Podiatry Section— a graduate of a college of podiatry accredited by the American Podiatry Association

- Health Care Administration Section— a baccalaureate degree with a major in sanitary science, environmental health, or hospital/health care administration; a Master's degree in hospital/health care administration is desirable.

Special student programs are available in the Medical Specialists Section, the Optometry Section, and the Health Care Administration Section which allow for completion of educational requirements under Navy sponsorship in return for a 2 or 3 year obligation.

EMPLOYMENT OPPORTUNITY

There are approximately 1,700 positions for men and women officers in the Medical Service Corps. The Health Care Administration Section is the largest of the six sections. Selection for entry into this Corps is very competitive, with few openings (probably less than 100) occurring each year.

ADDITIONAL INFORMATION

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PHOTOGRAPHY LIMITED DUTY OFFICER*

NATURE OF THE JOB

Photography Limited Duty Officers (LDOs) are technical managers of Navy photographic work. Photography is used in the Navy for reconnaissance (surveying areas by air to become familiar with land and water features, industrail development, housing patterns, and the movement of defense forces, etc.), for intelligence (collection of information about the plans and activities of opposing forces or potentially opposing forces), and for mapping and charting. Photography is also used in public information and public relations activities, in Navy newspapers, in personnel handbooks, in training materials and other publications. Motion picture and television camera work may be involved for both strategic and nonstrategic purposes.

Photography LDOs supervise enlisted personnel who do photographic work. It will be helpful to read about the following enlisted job categories, or "ratings," to understand the variety of things a Photography LDO may do as a manager:

Enlisted Ratings That Involve Photography	Pages in This Manual Where Information can be Found
Illustrator-Draftsman	196
Journalist	210
Photographer's Mate	283

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In general, the work includes:

- Installation and maintenance of cameras, camera control systems, and photographic processing equipment; procurement, storage, and stock control of photographic supplies
- Camera work
- Film processing, layout and stripping, printmaking, photographic mapmaking
- Maintenance of negative and print logs and files.

In addition to supervising and providing technical assistance to enlisted personnel who perform the foregoing activities, Photography LDOs do such things as plan and conduct training, and direct preparation of technical publications dealing with Navy photography. They design shipboard photographic laboratories, and advise on the selection and installation of photographic equipment for aircraft, ships, and bases. They review requests for photography, determine the type of coverage and the equipment best suited to the purpose, and determine the time, materials and personnel required. They assign priorities to photography jobs, prepare schedules and coordinate jobs. They plot flight lines for aerial photography and brief pilots and crew members on photographic requirements. They plan motion pictures and TV presentations, and direct script-writing and set design. They work with motion picture studios that produce Navy training and information films. They coordinate photographic matters with local photographic, intelligence, and public information officers, with other Navy personnel, and with personnel from other armed services.

The work of Photography LDOs varies, depending on rank and on the specific jobs to which they are assigned. A Photography LDO, may work, for example, as a Photographic Medical Officer, as a Photographic Officer or Photographic Director, as a Motion Picture and Television Project Officer, or as a Training Officer.

WORKING CONDITIONS

Photography LDOs share the conditions of the personnel they supervise. They may work, for example, in photographic laboratories, publication production ships, or office settings. They may be assigned to sea duty, to aircraft squadrons, or to shore facilities. Their work may involve a good deal of local travel when they are assigned to shore duty.

Sea-Shore Rotation

Like other Limited Duty Officers, Photography LDOs spend about 2-3 years on "sea duty" when they become LDOs. After that, they spend 2-3 years on "shore duty," then 1-3 years at an overseas Navy facility or 2-3 years at sea, followed again by 2-3 years ashore, and so on until retirement.

"Sea duty" includes all of the time during which an officer is assigned to a fleet unit (a ship, squadron or fleet staff). Much of that time will be spent in port at home bases. Therefore, the term "sea duty" does not mean time away from home but rather time during which there will be some periods away from home. "Shore duty" is duty at permanent shore locations, where Photography LDOs provide support for fleet units or for the Navy in general.

QUALIFICATIONS

To be eligible for Photography Limited Duty Officer, personnel must first gain experience as enlisted workers in the Illustrator-Draftsman rating, the Journalist rating, or the Photographer's Mate rating. Some enlisted personnel become Warrant Officers in the photography specialty before becoming LDOs. (Warrant Officers are generally technical specialists who have fewer management responsibilities than LDOs.) Other persons advance directly from enlisted to LDO status.

All Limited Duty Officers must acquire the general skills and knowledge appropriate for managers. They must understand the organization of the Navy, the relationships among its various units, and its role in relation to the other agencies in the Department of Defense. They must know naval history, customs and etiquette, Navy regulations, and personnel functions, rights and benefits. They must know the duties, authority, and responsibilities of officers in various categories. They must know standard procedures for administrative control and for operations. They must know how to plan and conduct training, and they must have the leadership skills necessary to guide personnel, develop individual responsibility, and keep up morale.

To become Photography LDOs, personnel must also have the technical knowledge and skills necessary to direct work in that field. The position of LDO is competitive. Personnel become LDOs by showing on the job and on qualification tests that they have superior technical and managerial capabilities.

EMPLOYMENT OPPORTUNITY

There are presently about 35 Navy Limited Duty Officers in the photography specialty. The number of opportunities for enlisted personnel to advance to that position fluctuates, depending on the needs of the Navy.

Existing legislation does not authorize appointment of Navy women to Limited Duty Officer status.

ADDITIONAL INFORMATION

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WARRANT OFFICER AVIATION OPERATIONS TECHNICIAN*

NATURE OF THE JOB

Warrant Officer (WO) Aviation Operations Technicians are specialists in the field of air traffic control. They guide Navy aircraft takeoffs, landings, and approaches for landing. They may work in control towers, where visual means and radio communications are used to direct aircraft movement. They may also work in radar centers, where they direct and monitor aircraft movement guided by radar instruments. WO Aviation Operations Technicians serve as traffic controllers themselves, and they supervise and train other personnel who work in the field of air traffic control. They also serve as technical advisors to command and staff personnel on air traffic control procedures and techniques.

WORKING CONDITIONS

WO Aviation Operations Technicians may work at naval air stations ashore or aboard aircraft carriers. The work can be mentally taxing. It frequently requires sustained concentration and quick, accurate judgment. WO Aviation Operations personnel do most of their work in control towers at airfields or in radar centers, which are instrument rooms in which personnel monitor and operate radars.

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Sea-Shore Rotation

Like other Warrant Officers, Aviation Operations Technicians spend about 3 years on "sea duty" when they become Warrants. After that, they spend 2-3 years on "shore duty," then perhaps 3 years at an overseas Navy facility or 2-3 years at sea, followed again by 2-3 years ashore, and so on until retirement.

"Sea duty" includes all of the time during which an officer is assigned to a fleet unit (a ship, squadron or fleet staff). Much of that time will be spent in port at home bases. Therefore, the term "sea duty" does not mean time away from home but rather time during which there will be some periods away from home. "Shore duty" is duty at permanent shore locations, where WO Aviation Operations Technicians provide support for fleet units or for the Navy in general.

Since Navy women do not serve aboard combatant ships, women in this specialty rotate among shore facilities in the United States and overseas.

QUALIFICATIONS

WO Aviation Operations Technicians must have served successfully as enlisted sailors and must compete to become Warrant Officers. The usual way of becoming a Warrant Officer in the Aviation Operations specialty is to get training and experience as an enlisted sailor in the Air Controlman rating. (That rating, or job category, is described on p. 58 of this manual.) Sailors in other enlisted ratings could advance to the position of WO Aviation Operations Technician, but it would be difficult for them to do so.

Aviation Operations Technicians, like other Warrant Officers must have certain general qualifications, including the ability to complete ship supervision and training duties efficiently. They must also know the most important aspects of the Navy's mission, history, traditions, personnel policies, legal procedures, leadership and management techniques, communication methods, and emergency as well as routine first aid procedures.

WO Aviation Operations Technicians must also know the complete organization and duties of the air operations departments at naval air stations and on aircraft carriers. They must know the civilian and Navy regulations, as well as the joint regulations for air traffic control. They must know the sources and uses of all kinds of information pertinent to air traffic control operations. They must know how to process flight clearances and conduct flight facility checks. They must know communications procedures for air traffic control, how to plot and report aircraft movement, and how to obtain and interpret weather data. They must also know administrative procedures for ordering, storing, maintaining, and accounting for air traffic control equipment and materials.

EMPLOYMENT OPPORTUNITY

Approximately 43 Navy Warrant Officers are working as Aviation Operations Technicians. The number of opportunities for enlisted men and women to advance to that position fluctuates, depending on the needs of the Navy. The position is competitive. It demands excellent skills and a high degree of responsibility, so it is limited to outstanding, experienced sailors. However, since air defense continues to grow in importance, there appear to be good opportunities in the aviation operations specialty for personnel who develop their abilities.

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